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Including the Railroad Gazette and the Railway Age

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THE report of the proceedings of the Master Boiler Makers' convention shows a most healthy condition of that vigorous young association. The papers and the tone of the discussions show that the members are fully alive to the opportunities that are afforded by gathering together in convention. Aside from this, the association is winning a place for itself in the esteem of the controlling railway officers. This is shown by the great increase of membership at the last meeting which amounted to nearly twenty-five per cent. of the former membership; there are now almost three hundred members. There is very little dead timber; nearly two hundred and twenty members were present at Pittsburgh, and this number was increased to over five hundred by the ladies and supplymen present. The railways are beginning to send their men to the conventions, and in one instance a superintendent of motive power paid the dues of four of his

men from his own pocket and sent them to attend, for the good of the department. As in all associations of this kind the discussions are experience meetings for the most part, and it is interesting to see how the work and conditions of one road check with those of another, and how in the end the reasons for the differences in practice are accounted for. For pure practical suggestions for the boiler maker there are few places where there is more to be found than in these conventions.

THE desirability of equipping all passenger, freight and electric cars with automatic brake slack adjusters was clearly brought out by W. H. Sauvage at the May meeting of the New York Railroad Club. The general practice at the present time is to so equip passenger cars, but very little has been done on freight equipment along these lines, reliance being placed on manual adjustment on the dead lever to provide the proper piston travel. This is an unsatisfactory arrangement, and it would seem that where the railways have gone to the heavy expense of equipping the freight cars with air brakes, the efficiency of the braking apparatus ought not to be interfered with because of the comparatively small additional expense involved to provide automatic slack adjusters. However a satisfactory automatic slack adjuster for freight cars was not described by either the author of the paper or those who took part in the discussion. The fact was brought out that there might be some difficulty in providing such an adjuster, because the freight cars will not get the same care as do the passenger cars where automatic adjusters are now giving satisfactory service. The statement was made by railway representatives that one reason why the railways did not apply adjusters on their freight equipment was because thus far no automatic adjuster had been placed on the market which could be sold for what was considered a moderate price. A condition that seriously complicates the problem is the difference in the lost motion in the car truck parts when the car is at rest, and when it is in motion. Mr. Sauvage made the assertion that from the economical standpoint of labor and time saved in making up long trains, and properly and uniformly adjusting the air brakes, the investment required to equip cars with automatic slack adjusters would pay for itself very quickly.

THERE are many terms connected with railway operation which are constantly used by railway men in ways that are perfectly clear to them, but not so clear to others. At this time, when the railways are being subjected more and more to public supervision and these somewhat ambiguous terms are brought out in examination before commissions, the railway man frequently has difficulty in explaining to the satisfaction of the board of inquiry the correct meaning of a term as differentiated from the literal meaning. An instance of this is the traffic man's expression of charging "what the traffic will bear." Another misleading term is "signal failure." Present parlance classifies as due to "signal failures" many delays to trains caused by signals at danger. When the block ahead is occupied by a train and the signal is at danger, showing that the signal is performing the function for which it is intended, it is a misnomer to call this a "signal failure." Another instance which has been brought into prominence recently is that of "rail failures" and "broken rails." Because of the increased attention now being given to the rail question it is important that the distinction between "rail failures" and "broken rails" be clearly understood by the public as well as by railway men. Failed rails, as reported by the railways, comprehend all rails removed from the track because of defects, including those broken, those having crushed or split heads, broken base, etc. Many of these defects appear gradually, affording ample opportunity for removal of the rail before complete failure and seldom causing serious accidents. It is only the rails actually broken, and but a small proportion of these, which give rise to accidents. An analysis of the failures reported in a tonnage aggregating 1½ million tons shows that but 25 per cent. of the

rail "failures" reported can be properly classed as rail "breakers." While failed rails of all kinds are a source of serious complaint between the railways and the makers, the public is concerned only with the broken rails because they are the only ones which have any appreciable effect on the safety of operation; and chiefly those broken owing to inherent defects, because they are the most dangerous. It is to be hoped that the railway commissions and other government bodies will appreciate the distinction when studying the reports referring to the rail question.

MARK TWAIN announced some years ago that he had discovered that it was safer to ride in a railway train than to remain at home, because so many more people die in their beds than are killed in railway accidents. The Indiana bureau of statistics has recently issued a comparison of accident records of various kinds for the year 1911 with those for 1902, showing the increases in ten years. It appears that in 1902 249 persons were killed in accidents on steam railways in that state, while in 1911 the number had increased to 364, or 46.2 per cent. For the same years the numbers of suicides in the state were 299 and 409. In other words, the railways do not kill the people of Indiana as fast as they kill themselves. The protective measures of the railways are more effective than the instinct of self-preservation, supposed to be the strongest of human instincts. The Indiana bureau has also compiled figures for other kinds of accidents, not confining its efforts to those associated with some "interest" that can be made a political target. These show that "deaths from natural causes, in which county coroners were called for examinations," increased 50.9 per cent. in the ten years, or from 873 in 1902 to 1,317 in 1911. Homicides increased 32 per cent., or from 103 to 136. Deaths from all accidents other than on steam, interurban and street railways increased 51.9 per cent., or from 462 in 1902 to 702 in 1911. The total of all accidental deaths increased 52.7 per cent., or from 755 to 1,153, and the total number of coroners' cases increased 48 per cent., or from 2,030 to 3,015. Thus we find that the percentages of increase of deaths in accidents on interurban roads and street cars, from natural causes and from other accidents were all greater than for the railways. The percentage of increase in suicides was less, but as the figures are larger than for railway fatalities in both the years compared, the suicide habit seems to have got an earlier start. The Indiana railway commission is looking after railway accidents by prescribing block signals, electric headlights, elimination of grade crossings, etc. The figures show that if the state would perform respectably its own special police functions, including that of keeping off railway right-of-way the trespassers who number one-half of the persons killed on railways, the benefits conferred on the public would be much greater and its policy of railway regulation would be much more consistent. And the same remark could be applied to every other state in the Union.

PAVEMENTS FOR TEAM TRACKS AND FREIGHT HOUSE DRIVEWAYS.

PAVEMENTS for team track and freight house drives are subject to very heavy loads from trucks, a large part of which are still horse-drawn. Any satisfactory pavement for such a location must be laid on a foundation solid enough to carry these loads without being damaged and must have a wearing coat smooth enough to cut down the tractive resistance to a minimum and hard enough to resist the grinding action of the wheels of loaded vehicles. In addition to these requirements, the surface must present under all weather conditions a good footing for horses in starting heavy loads.

The most common pavement for such locations is brick. Granite or other stone blocks are frequently used, and macadam is sometimes preferred. For locations where the cost must be kept down and the traffic is comparatively light, gravel cinders or

any good filling material may be dumped and allowed to compact under traffic. Brick pavement on a concrete base costs about \$2 a square yard under average conditions, and on account of the long experience that engineers have had in laying pavements of this type and the ease with which brick can be obtained in most localities its use is economical in many cases. The numerous joints allow a good foothold, and especially when the courses are laid perpendicular to the direction of the heaviest pull. When laid with solid foundation the life of bricks may be very high. In one instance, where a team yard was laid in a cut of solid stone the pavement has been in service 20 years and is still in good condition. On the other hand, many brick pavements laid on inferior foundations have to be replaced within five years.

Stone blocks are usually more expensive than brick, although in some localities they can be secured at a price that makes them very attractive for such paving. They are laid in the same way as brick and have the same general characteristics, except that as the blocks are larger there are fewer joints, making a surface which furnishes a poorer foothold for horses. Stones are more readily chipped along the edges forming rounded surfaces which make the pavement uneven and slippery. The lift of stone is generally greater than that of brick, and good granite blocks properly laid will in many cases prove economical, even at a first cost greater than that of brick.

Macadam is frequently used under medium weight traffic with good results. Its cost averages between \$1.00 and \$1.50 and some roads find that it gives a life of seven or eight years. It is likely, however, to wear into ruts and holes under a very heavy traffic or where horses stand continually. The use of an old macadam pavement evened up with concrete as a base for a new brick or stone pavement is a possibility that can sometimes be considered, especially when the pavement is laid in a new yard. In such a location the sub-soil is usually soft and a brick or stone pavement would not be likely to develop its full life because the foundation would not properly support it. In such a location a macadam pavement could be laid which would probably serve the purpose for a few years and then save a part of the cost of a concrete base usually required in the construction of a brick or stone pavement.

The increasing use of creosoted wood blocks for street paving in many cities has led to the consideration of this type by some railway engineers. Although it is not known that any wood blocks have been laid in team tracks they have been used for interior drives in some of the most modern freight houses and seem to have possibilities of wider application for such locations. The principal objection found by one railway company to such pavement in a freight house recently built was the tendency of the blocks to "bleed" in warm weather, making a slippery surface and causing some damage to packages of freight. This condition can be practically eliminated, however, by the use of a lighter oil for treating which will penetrate the blocks more uniformly. The heavier oils have been considerably used for paving blocks on the ground that they would more perfectly waterproof the wood and prevent expansion and consequent heaving of the pavement. Tests seem to show, however, that the results are fully as good when the blocks are thoroughly seasoned and properly treated with a thin oil. Such pavement can be laid in the same way as brick, using preferably a concrete base and either a sand or grout cushion layer. The cracks and surface of the blocks are usually brushed with sand, asphalt mastic or grout. A wood block pavement can usually be laid for less than \$3 a square yard. Pine blocks are most frequently used and are considered the best. A government report on tests made at Minneapolis grades other woods in the following order: Birch, tamarack, hemlock, larch and fir. The disadvantage of wood blocks for exterior pavements subject to heavy traffic is that in the winter the surface is likely to become very slippery, making it difficult or even dangerous for heavy traffic teams to use it.

The use of concrete pavements has not been seriously considered for railway purposes as far as is known. Such a pavement is coming into rapidly increasing favor for city streets, however, and when properly placed seems to have some good points in its favor. It can usually be laid for less cost than brick,

but little is known as yet of the life to be expected from it. It has been most frequently used for residence streets under comparatively light traffic, but in a few instances where it has been laid on warehouse drives and streets carrying a heavy trucking traffic similar to that in team yards, reports so far are favorable. The surface furnishes a good footing even when no corrugations are provided in the wearing coat. There are no cracks at which chipping can start, and if properly laid the advocates of concrete claim that the wear on the surface will be more equal than on any pavement made up of blocks.

THE NEWSPAPERS AND THE RAILWAYS.

WE give on another page a letter from N. T. Cobb, manager of the *Freeport (Ill.) Journal*, which will be read with interest by both newspaper men and railway men who appreciate the desirability of good relations between the roads and the press. Mr. Cobb's letter implies that their relations are bad and growing worse. This is not the case. It was a few years ago; but many railway men have learned better how to deal tactfully and fairly with the press and public, and many newspaper men have become better informed regarding, and more fair in their comments on, railway matters. But newspaper men have much to learn about the railway business and railway men have much to learn about the newspaper business before they will always give each other a fair deal.

Mr. Cobb's complaints may, perhaps, be summed up as being that the railway press agent tries to get matter which is really advertising printed in the newspapers as news, while when the roads have news, such as that relating to accidents, which the papers really want, the papers are sometimes unable to get it. These complaints are to a considerable extent justified—although railway men may think it significant that the news specially mentioned as the kind newspapers want is that about accidents. Many railway men have become aware that when anything happens on a road that is of public interest or concern, the best policy is frankly to tell the facts, whether they reflect credit on the railway or not. A policy of suppression, either out of regard for the feelings of the railway's claim department, or for any other cause, is not right. Nor is it expedient; for the newspapers are sure, when they hear about an accident, for example, to publish something, and if the railway man does not tell the truth they will sooner or later find it out and get revenge on him and on his road, and meanwhile will almost certainly publish an exaggerated and harmful "story." Unfortunately many railway managers have not learned both the rightfulness and the expediency of dealing thus frankly with the press and the public.

It is also true that many railways leave the handling of news regarding their affairs to their advertising departments; and that advertising agents, and those employed specifically as publicity agents, sometimes send out as news what really is not news, but advertising. Frequently this is the fault of their superior officers, who, while perhaps knowing little or nothing about the newspaper business, are unwilling to be guided by the knowledge and advice of those who do know something about it.

However, there is another side to this matter. The railways' total expenditures for advertising in the year ending June 30, 1910, were \$8,347,914. This does not indicate any want of disposition to buy and pay for advertising to such extent as propriety and business conditions justify. While the roads sometimes try to get free publicity for what may be advertising, the dividing line between advertising and news is not clearly defined. One newspaper will gladly publish what another in the same city or town will dump into the inhospitable waste-basket. In every large newspaper office there is "killed" about as much of what those who send it in consider news as there is published, including matter wired by the Associated Press and the papers' own correspondents. When newspaper men themselves differ so much they should not be too hard on others who cannot always guess what they will consider news. In many newspaper offices a story which cannot be "featured"—that is, given some whimsical, mysterious, amusing or sensational turn—is pretty likely to

be "killed," no matter how important. Is it any wonder that railway men are often puzzled as to why newspapers print one piece of information under large headlines, and scorn to give a line to another ten times as important? Newspaper men often criticise or express bewilderment at things railway men do. They do not do so any oftener than railway men express themselves similarly regarding what newspaper men do.

Then, there are some papers that can find plenty of news in attacks on railways by representatives of labor organizations, or shippers' organizations, or politicians, but can't find anything worth printing in what railway men have to say on the other side. Naturally, railway men can't understand why anti-railway views and information often are news, while pro-railway views and information on the same subjects are not news. Most newspapers are willing to print both sides of every question; but some habitually print the stories that are unfavorable to the roads on the first page and the stories that are favorable to them on an inside page next to classified advertising. To gain more prominence for their statements or arguments railway men sometimes have bought advertising space; and there are plenty of interested publishers and advertising agencies that constantly tell them they ought to do more of this. But a publication that will give free publicity to those that are agitating against the railways, and then insist on the railways paying for the presentation of their side of the case, is ceasing to be a newspaper and becoming a device for levying blackmail.

Fortunately, most newspapers don't belong to this class, and for the railways to buy advertising space in those that do, except, possibly, under very special conditions, would be unwise and immoral. For them to buy space in a newspaper to get fair treatment in its editorial and news columns—as some advertising agencies, which hope to get commissions on the sale of the space, persistently suggest—would be on a par with buying votes in a legislature to get fair treatment from it. A press that has to be bought, like a legislature that has to be bought, will soon become a very costly purchase, and will not be worth buying.

What the relations between the newspapers and the railways ought to be is easy to state. The roads ought to pay for the publication of everything for which they want publicity that is really advertising, although, as has been said, just what is advertising is sometimes hard to say. They ought to be frank in dealing with the press and give to it all the information to which the public has any right, and, perhaps, a good deal to which the public has no right. The newspapers, for their part, can very properly refuse to print as news what is really advertising. But they cannot in fairness, either to the railways, their readers or the general public, give for nothing publicity to attacks on railways, many of them most misleading and unfair, and then require the railways to pay for a real opportunity to defend themselves. The railway is a quasi-public institution. As such it is properly subject, in the interest of the public, to criticism and regulation. Likewise in the interest of the public, it is entitled to be defended, not only before the same established tribunals, but also through the same channels of publicity in which it is attacked. Otherwise public opinion will be misled, and these quasi-public concerns will be injured to the public's detriment. The press properly holds the railways, as purveyors of transportation to the public, up to a high standard of duty to the public. Can the press, as a purveyor of information to the public, consistently refuse to hold itself up to an equally high standard? Or can there be those who think the furnishing of transportation a function of so much more importance than the furnishing of the information on which the public may base its most vital decisions regarding public questions that the newspapers can justify themselves in performing their function on a lower plane than that on which they demand that the railways shall perform theirs? The railway man may well say to the newspaper man:

"Do not, as some ungracious pastors do,
Show me the steep and thorny way to Heaven;
While, like a puffed and reckless libertine,
Himself the primrose path of dalliance treads,
And recks not his own rede!"

LOCOMOTIVE BOILER EXPLOSIONS.

THE explosion of the boiler of the passenger locomotive at San Antonio, Tex., on March 18, described in the *Railway Age Gazette* of April 5, was the most disastrous that has occurred in recent years. The complete destruction of the firebox and boiler, the fracture and distortion of heavy parts of machinery, the large loss of life and the numerous personal injuries render it almost unprecedented.

The report of the federal chief inspector of locomotive boilers has been issued, and his conclusion is that the explosion was due to excessive steam pressure caused by an employee tightening the adjuster screw of the safety valve, which resulted in an accumulation of steam pressure beyond the endurance of the boiler. The steam gage did not correctly indicate the pressure, either on account of its own defects or because of an obstruction in the siphon pipe between the gage and the boiler. To obviate a recurrence of similar accidents, the chief inspector and his assistants have taken action to make necessary the use of two steam gages when setting safety valves, one of which must be so connected that it is in full view of the man who is setting the valve. It is also required that the siphon pipe and its connections to the boiler be cleaned and found open each time the gage is tested.

The report of locomotive boiler explosions in the United States for the five years from June, 1904, to June, 1909, shows that in that time 265 persons were killed and 3,656 were injured; but in no single accident was there any large number of fatalities, in most cases there being only two or three, and very seldom four. During recent years the average number killed per annum by locomotive boiler explosions has been fifty. The average number of accidents in which the boiler shell has been ruptured has been only 4.2 per year, and the number of explosions of fireboxes has averaged 51 per year. The great majority of firebox explosions are due to low water, and there is usually little destruction besides that of the crown sheet, and but a small loss of life. The San Antonio disaster is, therefore, historic in importance on account of the great loss of life, the complete destruction of the engine and boiler and the heavy damage to the adjacent buildings.

Such destruction is an exhibition of the sudden action of terrific forces, and many are not disposed to think that steam at a pressure not far above the normal working pressure of 200 lbs. to the square inch is sufficient to create such havoc. The use of dynamite and other similar explosives has become so frequent in connection with labor controversies that some prefer to attribute this explosion to such a cause, but, while the fracture of the driving axle between the frame and the forcing of both rear driving wheels from the axle exhibit results somewhat like those due to dynamite, there was no violent disturbance of the track below the rail and nothing to indicate a fixed point where any explosive may have been placed. A discharge of detonating compounds would have shattered the plates receiving the full force of the discharge into small fragments. This feature of the accident has been carefully investigated by a representative of the Bureau of Explosives of the American Railway Association, and it is understood that he has concluded that the main force of the explosion was due to steam and superheated water.

The destruction of boilers by excessive steam pressure in explosions, though rapid, is not instantaneous, and the somewhat gradual development of the force stored up in highly heated water exerts a pressure behind the separate pieces, which is better calculated to hurl them to a great distance, than is the force of an explosion acting instantaneously and suddenly dissipated. That a large volume of water at high pressure, and gradually accumulating working steam pressure above the normal working pressure, is sufficient to produce the violent results exhibited in this disaster, has been proved theoretically and practically. It has been demonstrated by competent authority that the destructive energy stored in water in a boiler under

steam pressure may be compared with that of gunpowder, and experiments have shown that gradually accumulating steam pressure exceeding the working strength of the boiler can produce violent explosions. There are on record a number of examples where nothing but steam and water under high pressure could have produced the complete destruction of locomotive boilers. A recent one was seen in the explosion of the locomotive boiler of engine No. 1111 on the Frisco Lines, November 9, 1911. This was an oil-burning locomotive hauling a fast passenger train, and it exploded while in motion soon after leaving Fort Scott, Kan. The running gear and machinery were thrown down an embankment and the boiler was projected some distance in another direction. Both engineer and fireman were killed.

A violent explosion can only come by the general disruption of a boiler and the liberation at once of large masses of steam and water. The bursting of a boiler is a local rupture due to the yielding of its weakest part to a pressure which, while not excessive, is too great for the weakened spot. The great majority of so-called locomotive boiler explosions due to low water belong to this class, and the destruction is usually confined to the firebox crown sheet, as the escape of water and steam through the crown stay holes gradually reduces the pressure. A sudden release of pressure when the shell sheets give way is attended by the more violent action which can be more properly termed an explosion. Very little of the destructive effect of an explosion is due to the steam which is confined in the boiler at the time. As soon as steam escapes and its compressive force on the water is diminished, the water is rapidly converted into steam and the enormous quantity of steam so produced in this exceedingly rapid operation produces the destructive effect of steam boiler explosions.

The energy stored in steam boilers is capable of exact computation, and the figures are sufficient to account for the most violent destruction of all recorded cases of explosion. Perhaps the best treatise on boiler explosions in English is contained in Thurston's *Manual on Steam Boilers*, and in that will be found a full explanation of the phenomenon under consideration, with calculations showing the energy developed, the height projected and the velocity attained by the sudden release of steam and water under pressure in boilers of various weights and cubic capacities. One example is given of a small locomotive boiler weighing 25,000 lbs. containing 7,000 lbs. of water with steam at 125 lbs. and it is estimated that the stored energy was sufficient to project the boiler to a height of 2,850 ft. at a velocity of 400 ft. per second.

NEW BOOKS.

The Earning Power of Railroads, 1912. By Floyd W. Mundy. Published by James H. Oliphant & Co., 20 Broad street, New York. 7½ in. x 5 in. 526 pages.

There are few changes in the 1912 edition of this standard little book of reference. The book is a simple compendium of figures and facts in regard to the earning power of railways. It is divided into two parts, the first part being a set of tables for each of the railways in the United States of more than a few miles long, showing mileage, earnings, capitalization, and division of operating expenses, with certain few traffic statistics. The second part of the book is an alphabetically arranged set of notes on each one of the railways for which tables are shown. These notes show the dividend record of the company, a brief history of the recent financing, and of changes in corporate relations. The work does not lay claim to any analysis of the figures that it gives, and gives comparatively few figures, but it gives them on a uniform basis and in a very handy form to refer to. The book being small, and the roads being alphabetically arranged, it is easy to use and, therefore, meets two very important requirements of a reference book which is often consulted.

Letters to the Editor.

A NEWSPAPER MAN ON NEWSPAPERS AND THE RAILWAYS.

FREEPORT, Ill., May 14, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Whether the evolution (or is it de-volution?) of a railway man into a newspaper man can be looked upon as a reformation, is a debatable question; but experience as both on the part of the writer enables him to form opinions which may, or may not, be of value.

From time immemorial, the newspapers have been the best friends of the railway managers, but today, possibly through the acquiescent characteristics of the news man in the past, together with the continual efforts of the railway "press agent" to "put things over" on the newspapers, there is fast crystallizing a change of sentiment on the part of publishers which does not portend good to this great engine of civilization—for the railway and the newspaper are unquestionably the two most potent factors in the world's development; and a spirit of frankness on the part of the railway toward the newspaper would do much to curb this growing feeling of lack of sincerity on the part of the railway, as evidenced by acts of subordinates.

To make the point plain, in my own experience there have been times when information regarding wrecks has been asked of division officers, and either the reports have been denied, or accounts given for publication which minimized the accident. It has been my custom to print the statement of the railway office as a "rider" or "add" to the story brought in by my own reporters, which is often at variance with the story as furnished by the road, and let the public judge for itself. There is no disposition on the part of news gatherers to give the roads anything but a square deal; but it is asking too much of human nature to expect them to give an unbiased account when they are deprived of every means of verifying the reports at the headquarters of the railway company, or when garbled accounts are given.

Many of the larger railways employ press agents to write "inspired" news, which is a most seductive form of advertising, and send it broadcast to the country newspapers with the explanation that "this story is furnished you gratis, and is subject to release on blank date." In all self-respecting newspaper offices, these communications find their way to the junk man, via the waste basket. The American Newspaper Publishers' Association issues weekly a bulletin of such free space grafters, and the wise publisher does not fall for any of their "stuff."

As to advertising. In many of the states, while railways are continually requesting free space for their "inspired" items, and for their timetables, there is absolutely no courtesy extended the papers in return. During labor troubles the small official who has often "crumbed" the reporter, will "hot-foot" it to the paper with columns of his side of the question, and cannot understand why the paper does not sidetrack its live news to give the railway statement the right of way—and, although the subject matter is simply an advertisement, no *quid pro quo* is offered.

The whole question of the relations of the railways to the public is one which intimately concerns newspapers; and the sooner that the views of railway subordinate officers are broadened sufficiently to enable them to see things on the side of the track and their vision is not confined to the two rails which terminate in the perspective only a few hundred yards ahead the better it will be for the railways and the communities they serve.

N. T. COBB,

Manager, Freeport (Ill.) Journal.

DISCOUNTING MATERIAL BILLS.

CHICAGO, May 10, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In these days when railway companies, their officers and employees are being urged from all sides to make the most efficient use of their resources, does it not seem strange that roads do not take more advantage of one very effective method of reducing operating costs, namely, that of discounting their material bills?

Take for instance a road earning \$500,000 a month; here is a company with some \$40,000 flowing into its treasury each day. This money is one of the tools with which it accomplishes its work. Suppose that this road has material bills approximating \$100,000 a month, of which say, half, or \$50,000, is subject to a discount of 2 per cent. for cash within ten days from date of invoice or bill of lading. Pay rolls, of course, take first place, when the use to which the daily cash income is to be put is being considered, but should not material bills come second? And would not the directors of the above railway insist that a part of the daily cash inflow be used to discount such bills as carry a discount privilege, when it is called to their attention that by so doing there is a saving of \$1,000 per month; probably much more than the entire expense of their purchasing department?

A railway is not like a commercial company, whose promptness in meeting bills depends on its success in making collections. The railway business is on a cash basis; so why should not its payment for material be likewise, particularly when there is so large a gain to be effected?

Material bills have to be met within from 60 to 90 days. Not many concerns can afford to carry the company for a longer period, and those that do probably add enough to the price (knowing the reputation of a given road) to cover interest.

The railway in question by not discounting its \$50,000 bills, pays \$1,000, or at the rate of 8.16 per cent. a year, for the use of \$49,000 for 90 days. In other words, it indirectly borrows \$49,000 and pays interest at the rate of over 8 per cent. during such a period as it can successfully stand off its creditors. Of course, the longer it can defer payment the lower the rate of interest becomes; but, as before suggested, creditors who do not insist upon payment after 90 days are probably well protected in the price originally charged for the material, and this is a day when any business house which has as good credit as the average railway can get what money it needs for its business from its bank at 6 per cent.

Then there is the minor consideration of the added labor in several departments caused by the ceaseless tracing and checking of overdue statements, which has to be done on a road which does not pay promptly. Were the company to discount its bills, there would result a more cordial relation between the railway and the supply houses, which should bear fruit in many ways.

PURCHASING AGENT.

The Fukien Railway, a Chinese company engaged in building a road from Amoy, China, to Chang Chow, 30 miles, has completed about 18 miles of its road and exhausted its funds of \$1,000,000. To complete the line will require \$300,000 for a bridge and \$150,000 for the remainder of the road. The 18 miles now completed are being operated at a loss of \$1,500 a month; 10,000 passengers a month are carried, but the hauls are too short to net the company a profit. Last year a promise of \$150,000 was secured from the Chinese in Java, to go toward completing the road to Chang Chow City, after which it is estimated the road will be on a paying basis. The company is to be reorganized and it is said that Dr. Lim Boon King has been appointed to effect reorganization and will be empowered to raise the necessary capital to complete the construction of the road.

BASCULE BRIDGES OVER BUFFALO SHIP CANAL.

Interesting Work Required in the Elimination of Grade Crossings Involving a Railway, a Highway and a Waterway.

BY EMILE LOW, M. AM. SOC. C. E.

An important piece of grade crossing elimination is at present in progress at "Tifft Farm," Buffalo, N. Y., the crossing of the Hamburg turnpike and the Buffalo Creek Railroad, near the junction of the Beach and Island branches. This work is being handled by the Buffalo Creek Railroad Co., a portion of it being paid for in whole by the railway company, and a portion jointly by the railway, the city of Buffalo and the Buffalo & Lake Erie Traction Company.

EXISTING RAILWAY AND HIGHWAY CROSSINGS.

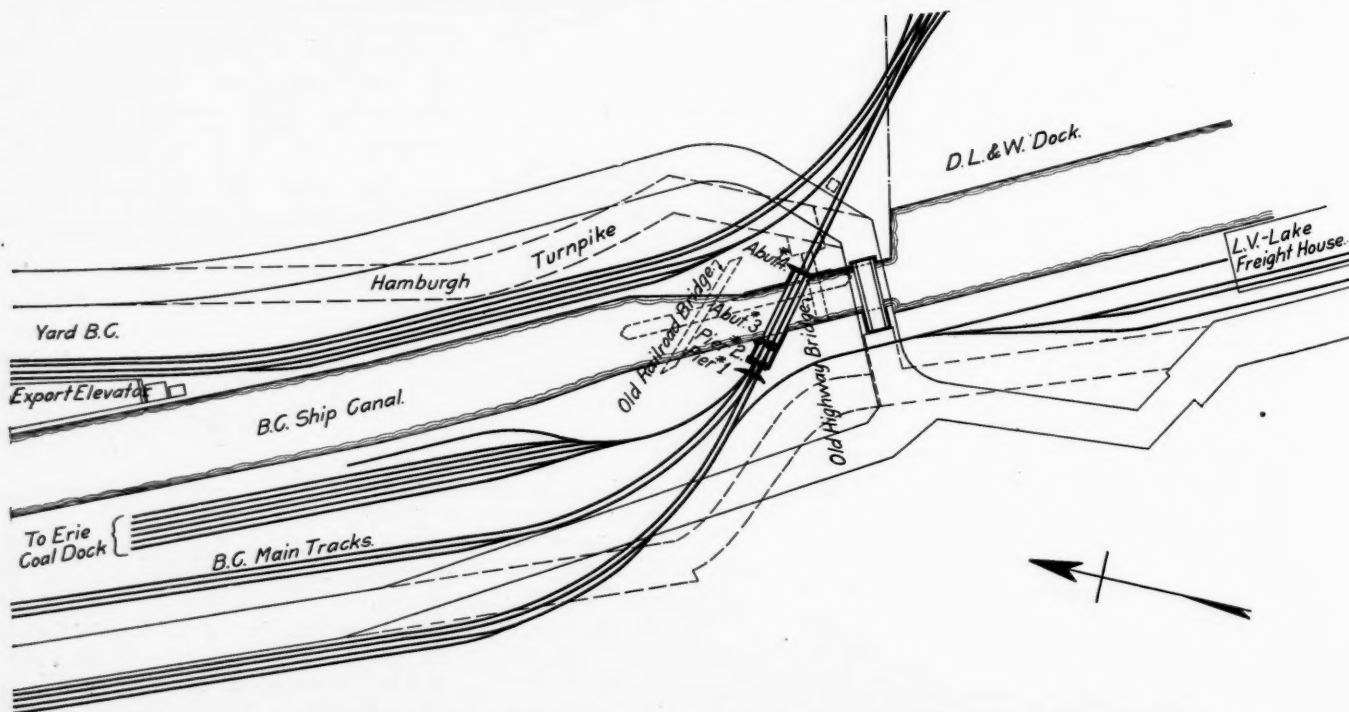
Although the ship canal referred to in this article is a continuous waterway, it may be stated, for the purpose of accuracy, that the western end is owned by the city of Buffalo and the eastern end by the Buffalo Creek Railroad Co. To avoid useless repetitions the term "City Ship Canal" is used indiscriminately. The Buffalo Creek Railroad is a belt terminal line leased by the

An interlocking tower is located at the junction of the two branches containing an electric plant which governs train movements from the main tracks into the different yards and connections at this point.

DESCRIPTION OF WORK.

The recent grading and paving of Hamburg turnpike, a highway skirting the water front of Lake Erie and connecting the city of Buffalo with the town of Lackawanna, resulted in producing a large traffic, electric street car and vehicular, including automobiles, which made the separation of grade at these crossings imperative.

In order to accomplish this separation both the present railway and highway swing bridges were abandoned, and new bascule lift bridges in a slightly different position were built. The new railway bridge is several feet lower than the old one



Location of Buffalo Creek Railway and Hamburg Turnpike Movable Bridges Over Ship Canal.

Erie and the Lehigh Valley. Its Beach branch, in order to reach the varied industries such as coal trestles, iron ore hoists and warehouses located along the south side of the City Ship Canal, now crosses the Hamburg turnpike at grade, near its junction with the Island branch, and crosses the adjacent canal at an angle of 45 deg. on a swing bridge which was built in 1883 by Kellogg & Maurice, of Athens, Pa.

The Hamburg turnpike also crosses the City Ship Canal on a swing bridge about 200 ft. south of the railway bridge. The highway crossing is at right angles. The channel passages for boats at both bridges are about 56 ft. wide for the main and 50 ft. for the side channels.

The Island branch of the railway traverses the long peninsula, lying between the Buffalo river and the City Ship Canal, both paralleling the water front of Lake Erie. This peninsula extends from Tifft Farm to Main street, a distance of 1½ miles, and on it are located most of Buffalo's grain elevators, flour and linseed oil and other mills as well as numerous warehouses.

and the new highway bridge is enough higher than the old to allow the turnpike to cross the railway tracks overhead. A corresponding change in the location of the highway and the bridge approaches had to be made. All of these changes are shown in the accompanying plan.

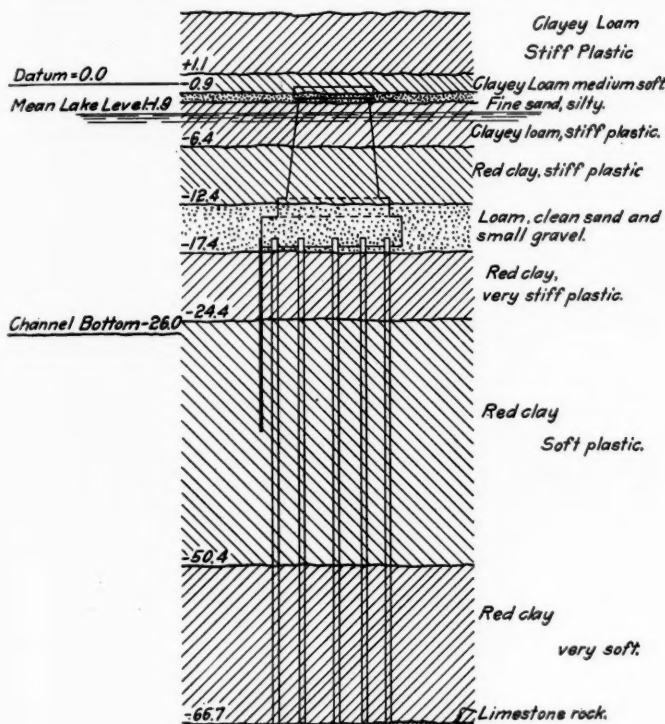
The traffic on the old bridges and a clear channel for the frequent movement of the lake steamers and harbor tugs through the two bridge draws had to be maintained without interruption during construction, a condition which greatly complicated the work. As construction advanced the old highway bridge had to be moved to a new temporary location, to be used while the new highway bridge was being built.

BRIDGE FOUNDATIONS.

The elevation of limestone bedrock at the bridge crossings is about 65 ft. below the mean level of Lake Erie, the overlying material being mainly a reddish colored clay, with occasional seams of sand, gravel and quicksand. The depth of the navigable

channel is 23 ft., the same as that provided in Buffalo harbor by the United States government. In designing foundations for the bridge superstructures, it was decided to use piles driven to rock with the tops 15 ft. below mean lake level, the concrete masonry carrying the superstructure to rest directly on the tops of the piles. The maximum load for any one pile is about 20 tons.

Cofferdams were made of 12¾ in. x ¾ in. x 30 ft. Lackawanna



Strata Overlying Rock at Bridge Site.

steel sheet piling, the piles weighing 37.187 lbs. per lineal ft., or 35 lbs. per square foot of wall. The first cofferdam was built for pier No. 2. It was 20 ft. wide and 50 ft. long. The elevation of the original surface of the ground was about 16 ft. above water level and was graded down to about 6 ft. above water before the sheet piling was driven.

The photograph of the completed cofferdam reproduced herewith shows how well this sheet piling can be held in a vertical position when driven, and the almost perfect alinement of the walls. The piling was allowed to project about 5 ft. above water level, the remaining 25 ft. being driven into water and the clay bottom.

Upon the completion of the cofferdam, the water was pumped out and the enclosed material removed. Some of the material was handled by orange peel buckets raised and lowered by a derrick and some was loosened with picks and loaded into dump buckets which were handled by the same derrick. As the excavation proceeded, timber struts were placed inside the cofferdam walls in both directions, impinging upon waling strips to distribute the pressure. Three lines of struts about 5 ft. apart vertically were thus placed.

After the excavation reached the required depth, 14 ft. below mean lake level, the bearing piles were driven by a pile driver carried on a platform of 12 in. x 12 in. timbers laid directly on the steel walls. The first pile driven struck rock at a depth of 50 ft., and as the rock surface was found to be almost absolutely level, the remaining piles were all cut to this length.

Five rows of piles were driven, 3 ft. apart each way, with two additional rows under the pedestals. The total distributed load on the 109 piles is 1,482 tons or nearly 14 tons per mile. On the assumption that this load is carried directly by 70 piles, the load would be 20 tons per mile.

The wooden forms for the concrete foundation course were next placed. This course is 5 ft. high with one offset, the piles

extending one foot into the concrete. All material between the piles had previously been removed to this depth below the heads. The concrete was made of one part cement and five parts of a natural mixture of sand and gravel. It was mixed in a Smith mixer, and handled from the mixer to the forms in bottom drop buckets.

Old rails were placed 18 in. above the bottom of this foundation for reinforcement, spaced 24 in. apart crosswise and 36 in. apart lengthwise. After the concrete in the foundation course had set the forms were removed and short shores were set between the concrete and the steel walls. The lower set of braces was then removed and forms set up for the course extending up to the next higher set of bracing. After this course was placed and had set, the forms were removed, short struts were put in and the bracing removed as before. This procedure was repeated until the concrete reached the finished top of the pier.

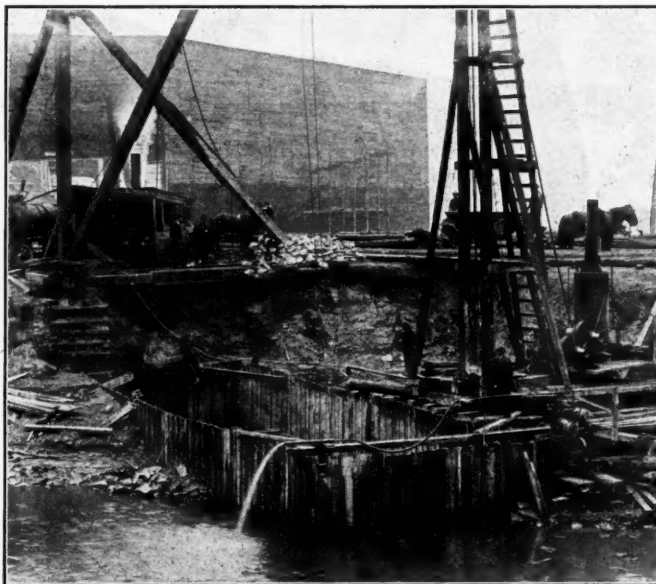
The concrete forms were kept independent of the steel sheet piling, tie rods being used to keep them from spreading. This prevented the concrete before setting from being disturbed by any swaying movement of the steel sheet piling which had but little transverse stiffness.

The ties between the pedestals and the pedestal copings are reinforced by ¾ in. corrugated bars, spaced 12 in. apart each way. Anchor bolts and bearing plates were set before the concrete was placed.

Upon the completion of Pier 2 the steel sheet piling was withdrawn without difficulty, and every piece was found in perfectly good order for redriving in the cofferdam for Pier 3, which was the next one built. This cofferdam was very similar to the first. The bottom of the concrete here is 1 ft. lower or 15 ft. below mean lake level.

As this pier is located in the west channel little excavation of material was required. It was only necessary to pump out the water, brace the steel walls and drive the foundation piles, of which there are 148. The total distributed load is 2,044 tons or nearly 14 tons per pile, the same as in Pier 2. Assuming that 100 piles carry the load, the load per pile would be 20 tons.

In addition to the bearing piles, a single row of 6 in. wooden



Completed Cofferdam for Pier 2.

sheet piling, 20 ft. long, was driven along the channel faces of this pier, to which a waling piece was fastened near the top. This row was anchored to the interior piles by 1¼-in. rods, 9 to 10 ft. long. The concrete in this pier was placed in the same manner as in Pier 2. Upon completion of the pier the steel sheet piling was again pulled and used in the cofferdam of the east abutment.

Part of this abutment is located under the northern end of

the old highway swing bridge. As no interruption to the traffic was permissible, some of the steel sheet piling had to be driven during the night, between the hours of 12.30 and 5.00 o'clock a. m., the draw span being kept open for this purpose. There was a little leakage in this cofferdam, but the leaks were quickly stopped, by dumping small cinders in the water along the outside face, which were forced into the interlock by the hydraulic pressure. Some of the foundation piles were also driven during the night, and all of them were driven to their ultimate depth about 15 ft. below water level, by using a follower.

The main abutment is carried on 69 piles and the wing wall on 45. The spacing is 3 ft. x 4 ft. and 4 ft. x 4 ft. The loading is 521 tons and assuming that this is carried by 50 piles the load per pile is 10 tons. It may be stated that the driving of the steel sheet piling and that of the foundation piles progressed at the same time, all of the latter being driven before the final completion of the cofferdam. The wooden sheet piling, 4 in. thick and 20 ft. long, was driven along the channel faces by a short driver especially constructed to go under the old bridge. The purpose of this wooden sheet piling is to retain the material between the upper ends of the foundation piles, the bottom of the concrete foundations being several feet above the bottom of the channel. The driving of the wooden sheet piling, as well as the excavation and the placing of the concrete in this abutment was carried out during the day. The concrete mixture was 1:3:5.

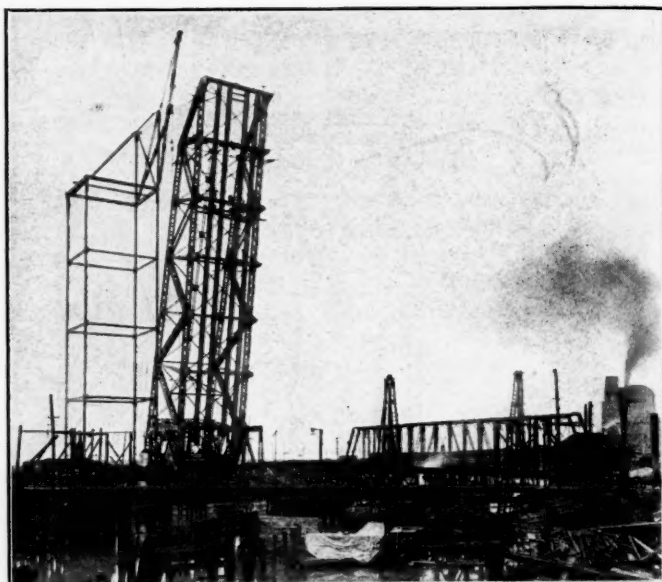
LIFT BRIDGE.

A double track Scherzer rolling lift bridge will carry the railway. This replaces the present single track swing bridge and crosses the canal about 125 ft. south of the old bridge. The crossing angle is 47 deg. 30 min. The main dimensions are 219 ft. 1 in. between back walls, 151 ft. center to center of bearings, 29 ft. 6 in. center to center of trusses, 13 ft. center to center of tracks, 21 ft. head room, and 85 ft. clear channel width.

The American Bridge Co., was the contractor for the fabrication and erection of this bridge. Work was begun immediately

after the completion of Piers 2 and 3. It was erected in a nearly perpendicular position, the working plant being a steel skeleton tower located alongside the bridge and carrying the necessary derricks for handling the structural steel.

The superstructure, operating machinery and power equipment of this bridge were designed by the Scherzer Rolling Lift



Construction of Scherzer Bridge; Buffalo Ship Canal.

Old railway swing bridge in center distance. Old highway swing bridge and new abutment No. 4 in foreground.

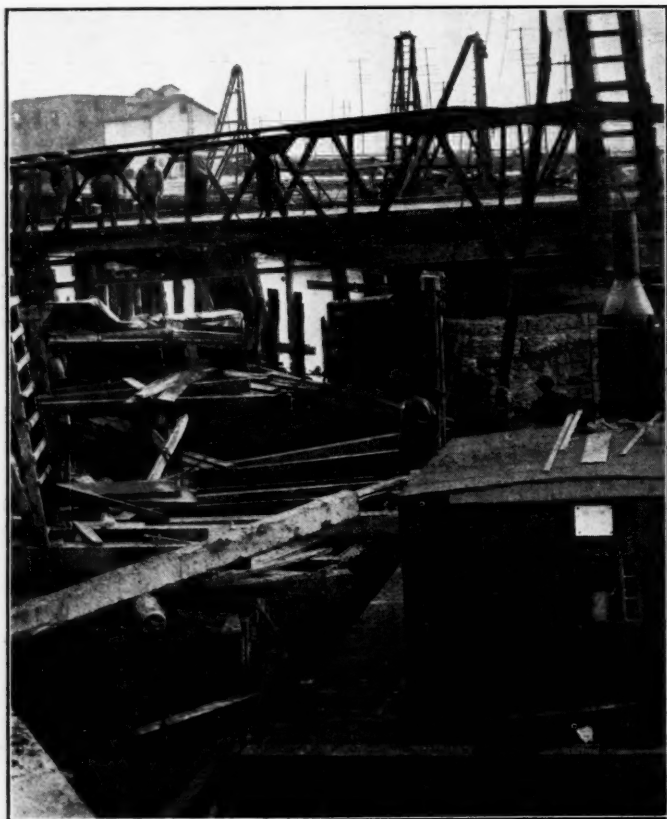
Bridge Company, Chicago, in cooperation with the engineers of the railway company.

HIGHWAY BRIDGE.

Owing to the interference of the north abutment of the new railway bridge with the old highway bridge, it was necessary to move the latter to a new temporary location for use, pending the construction of the new one. A center pier and side abutments, with necessary approaches were constructed of piles and pile bents, 185 ft. upstream. On the Sunday decided upon for the removal of the bridge, a gale approaching 70 miles per hour was blowing, which interfered somewhat with the moving operations. The entire day and part of the following Monday were consumed in the change, with a delay of five hours to the traffic. The old bridge was moved by blocking up on a dump scow under each arm. It was expected that hydraulic jacks would have to be used, but the unexpected high water due to the gale made their use unnecessary, as the rise in water assisted in floating the bridge off. It was then towed into position on the new supports.

Under the "Hamburg turnpike agreement" the Buffalo Creek Railroad Company builds the new bascule highway bridge over the Ship Canal. The Buffalo Creek pays eight-tenths of the cost, the city of Buffalo and the Buffalo and Lake Erie Traction Co. each paying one-tenth. The city of Buffalo builds the viaducts and ramps adjoining this highway bridge, the Buffalo Creek paying 50 per cent. of the cost, and the city of Buffalo and the Buffalo & Lake Erie Traction Company each 25 per cent.

The new structure is similar in design to the Ohio street bridge over the Buffalo river, although it differs materially in detail from that bridge. The Hamburg Turnpike bridge has pony trusses with a span of 92 ft., spaced 30 ft. center to center. It will be operated by electricity, the counterweights being of concrete. It will carry two electric car tracks, 4 ft. 8½ in. gage, on 13 ft. centers. Two side walks for foot passengers, each 6 ft. 6 in. wide are also provided. The bridge crosses the canal at right angles, and lifts in the same direction as the railway



Cofferdam for Abutment 4, Showing the Driving of 4-In. Wooden Sheet Piling with Small Hammer. Old Highway Bridge in Background.

bridge, the main and rear pier being on the south side and the rest pier on the north side of the canal.

The foundations are of the same character as those of the railway bridge; piles driven to rock, surmounted by concrete masonry, the tops of the piles being imbedded to the depth of one foot. The bottom of the concrete of the rear pier is 8 ft. below mean water level. The rock elevation is 65 ft. below the water, requiring piles 57 ft. long. The two rear piers are T shaped, the dimensions being 20 ft. x 11 ft., with stems 12 ft. long and 13 ft. wide.

The piles are driven on 3 ft. centers each way, with some extra ones under the main towers, 61 piles in all. The uniform distributed load is 282 tons or an average load of $4\frac{1}{2}$ tons per pile. The tops of these rear piers are 11 ft. above water level and have a total height of 19 ft.

The main pier is 64 ft. long and 14 ft. wide. The bottom of the concrete is 22 ft. below mean lake level, the piles being driven on centers about $2\frac{1}{2}$ ft. by 3 ft., with extra ones under the towers. There are 182 piles, carrying a distributed load of 600 tons or about 3 tons per pile. As this load, however, is carried directly by 100 piles, the load is about 6 tons per pile. The length of the piles under the main pier is about 40 ft.

The rest pier is 56 ft. long and 11 ft. wide. The piles are driven on $2\frac{1}{2}$ ft. by 3 ft. centers, there being 5 rows of 19 piles each. The load is 274 tons, about 3 tons per pile, the weight being considered evenly distributed. As this weight is carried by 60 piles, the load is a little less than 5 tons per pile. In addition to the bearing piles, a single row of 6 in. wooden sheet piling was driven along the front and end faces, and tied to the other piles by $1\frac{1}{2}$ -in. rods about 7 ft. long, passing through a waling strip near the top. The bottom of the concrete is 14 ft. below mean lake level, or 9 ft. above the bottom of the navigable canal.

PLANT EMPLOYED.

The excavation for Abutment 1 and Piers 2 and 3 was made partly by hand and partly by orange peel buckets attached to the boom of a derrick 68 ft. long, located as the work required, sometimes on the adjoining shore and sometimes on the finished structures. The excavated material was generally loaded into dump wagons and distributed along the adjacent right of way. The excavation for Abutment 4 was made by a derrick scow, the material being used for filling behind the abutment.

Two pile drivers were used in the work, one a floating and one a land driver. In driving the sheet piling, many obstructions were met, such as riprap stone, old piles and timbers, making it necessary in many cases to withdraw and redrive the piles. Upon completion of an abutment or pier, the steel sheet piling was pulled in various ways. The pile driver engine with triple fold tackle, hung in the leads was used in many cases; some were pulled with levers and others with a derrick. The pulling was in most cases quite easy, only occasional trouble being caused by binding.

The number of piles driven daily varied considerably, the best day's work being 28 piles in 10 hrs., the regular daily working time. Generally the foundation piles drove very easily, except through the thin strata of sand and gravel occurring about 25 ft. below foundation level.

For Abutment 1 no cofferdam was required, the excavation being carried only 4 ft. below water surface. Short foundation piles from 30 to 35 ft. long were used.

For mixing the concrete a Smith mixer was used, set up in convenient places.

For Abutment 1 and Piers 2 and 3 the concrete ingredients were all wheeled to the mixer and the mixed concrete placed in the forms in drop bottom buckets handled by a derrick. For Abutment 4 the mixer was set up over the cofferdam, the materials were wheeled to it and the mixed concrete placed in the forms by chutes.

For unwatering the cofferdams, two centrifugal pumps were used, the smaller one with an 8 in. suction and 6 in. discharge

pipe, and the larger one with a 12 in. suction and 10 in. discharge pipe. Generally the smaller pump sufficed to keep the foundations clear of water.

S. M. Kielland, chief engineer of the Buffalo Creek has charge of all the work for the railway company, Chas. W. Buchholz acting as consulting engineer.

All the work, except the bascule bridge, is being handled under contract by the Henry P. Burgard Co. Charles A. Dennis is the general superintendent and sub-contractor for the pile driving, and J. Carson is the assistant engineer on the work.

E. P. RIPLEY AND R. S. LOVETT ON "WHAT'S THE MATTER WITH TEXAS?"

E. P. Ripley, president of the Santa Fe system, has written a letter to the Texas Welfare Commission, which has been conducting a series of hearings for the purpose of considering whether Texas industries are hampered in their growth and operation by the laws of the state. Mr. Ripley's letter is in response to a request by the commission for his views on the general subject of the relation of Texas to its railways.

Mr. Ripley said that when he became president of the Gulf, Colorado & Santa Fe 16 years ago it was about as good as the average Texas railway of those days. It was originally projected by citizens of Texas, and was mainly built by them under the encouragement of the then Texas laws.

"It may or may not be," he said, "that this railway was over-capitalized at the time I became connected with it. I do not think its capitalization was largely in excess of its cost, but if it was it was the result of financial methods duly approved by the state of Texas, and carried on under its laws and auspices."

He then outlined the great improvements that have been made, notwithstanding which in only four of the sixteen years has the property been able to earn the interest on its debt, and as a net result of 16 years of effort, plus an expenditure of approximately \$10,000,000 of new money borrowed from outside the state, the investment is short nearly \$2,000,000 of earning its interest.

"The result of this large expenditure has been to create a first-class railway where an exceedingly inferior one existed before. It would be unfair to say that no advantage has been derived from this, because a certain amount of tonnage has been collected on these Texas lines which has paid transportation tribute to other lines of the system. But the fact remains that the most liberal estimate of the earnings of the Texas lines fails to show any substantial return on the amount invested therein, or any substantial return upon a fair valuation of the properties.

"The conclusion is, therefore, unavoidable that the people resident in other states are furnishing the state of Texas with transportation for which it does not pay, and under these circumstances, it would seem quite unnecessary to go further for a reason for the reluctance of investors to trust their money in Texas. Of course, there are also other and collateral reasons for this reluctance to be found, viz.: In the various acts of the legislature which have increased the operating costs, while public sentiment and public prejudice seem also to regard the railways as fair game for predatory laws and all kinds of trespass for which no effective remedy exists. The personal injury and damage payments on our Texas lines are four or five times greater on any basis of comparison than on the average of other lines with which I am connected. This is certainly not due to physical difference in the properties in and out of the state. Other states have adopted some of the injurious laws current in Texas, but I believe that it is and has been true that while some of the other states have, in some respects, been more radical, the latter is still in the front rank; although it is proper that credit should be here given to the policies of your present governor, and the conduct of your last legislature.

"The state tax board of your state entertains apparently an idea of the values of railway property differing from that held by your railway commission, and value our property for taxing

purposes at a sum greatly in excess of what we can earn interest on; this, of itself, would seem to be sufficiently discouraging to investors.

"But the duty of the welfare commission is to consider the best interests of all the industries of the state rather than those of any one special industry, and if the present railway policy is right; if it conduces to the best interests of all the people—then it is manifestly the duty of the state to take over the railway properties and manage them, accepting such losses as may thereby be entailed. I maintain that the interests of the state and its inhabitants would be vastly better served by changes in policy which would result in more railways and better railways. Many of the roads in the state are mere imitations of what a railway should be and if the state is to attain the growth for which we are all working, millions upon millions must be spent in making them equal to the tasks that will be imposed upon them. Texas cannot furnish these millions and would not if it could. What have you to offer to those whose thrift or whose ancestry has endowed them with money to invest? You offer no opportunity for profit and doubtful security for the principal of the investment; the income of the investor is limited by one political body, while another political body legislates him into all manner of expensive restrictions, and much of the earnings are consumed by damage payments far in excess of those inflicted by other states.

"I am not advocating freedom from restraint, or regulation, but only that the regulation be reasonable, business-like, and of a permanent and non-political character. I would have at least one railway man on the commission—not a lawyer or an advocate, but a practical traffic man, appointed and not elected. I would debar any railway commissioner from thereafter holding any political office for at least five years. I would require approval of at least a majority of the commission of any legislation affecting the operating of railways, and I would make illegal the acceptance by lawyers of a percentage of amount recovered in damage suits. I would permit the railways much greater earnings and in return insist upon much higher standards of construction, maintenance and operation. I would permit, and even encourage, the lease or sale of any Texas road to roads outside the state. The present law requiring separate state organizations for small pieces of track is burdensome and serves no useful purpose, or at least no purpose that cannot be otherwise attained."

Robert S. Lovett, chairman of the executive committee of the Harriman Lines, addressed the commission on May 15 at Dallas.

He outlined briefly some changes in the railway laws that in his opinion should be made for the welfare of the state, saying that it is impossible to finance a railway in Texas under existing conditions.

"Every railway company should have the right to issue bonds at par to cover existing obligations," he said.

"It's too late now to talk of the validity of existing bonds. Independent railways in Texas cannot succeed. They face failure and receivership with the present laws. Railway rates are like the common law of England. They simply came into existence through the exigencies of the situation. Stocks, bonds and physical value of a railway have nothing to do with the rate schedule of the road. Past mismanagement by individuals at the head of railway companies has been exaggerated by the ambitious politician, who has poisoned the minds of the people and secured the enactment of the present statutes.

"The provision for the forfeiture of railway charters for petty and trivial matters is a menace to the progress of Texas.

"The present personal injury claim provision is a scandal to the state and should be remedied."

The Brazilian government has approved the plans and estimates of a 36-mile extension of the Jaguarao to Basilio railway, as well as those of 34 miles of the San Sebastian to Santa Anna to Livramento railway.

TELEPHONES ON AMERICAN RAILWAYS.

The report of the Interstate Commerce Commission, showing the mileage of railways in the United States on which, on the first of January last, telephones were in use for transmitting train orders, was noticed in the *Railway Age Gazette* of May 10, page 1043, the total length of road thus reported being 58,584 miles, or something more than one-third as much as the mileage on which the Morse telegraph is continued in use for this purpose.

To show the extent to which telephones have been introduced on the larger railways, we have copied from this report the statistics of those roads on which the telephone mileage amounts to 100 miles or more, and these figures are shown in tabular form below; and in connection therewith we have secured from these roads statements showing the extent to which they use telephones over long distances for other purposes, and also the number of portable telephones in use. The statistics from the government report are shown in the columns numbered 1, 2 and 3, and the other information in the last five columns. Attention is specially directed to the foot notes accompanying the table. The headings of the columns in this table are to be read as follows:

- 1—Miles of railway on which the Morse telegraph is used for the transmission of train orders.
- 2—Miles of railway on which the telephone is used for the transmission of train orders.
- 3—Total miles of railway operated by the company.
- 4—Total miles of telephone circuits in use, on the roads named, in addition to train-despatching wires, but not including block signal wires.*
- 5—Number of telephones installed at meeting places where there is no operator (including also telephones for use of trainmen, at night, at stations where there is an operator in attendance during the day).
- 6—Number of portable telephones in use on passenger trains.
- 7—Number of portable telephones in use on freight trains.
- 8—Number of portable telephones in use on wrecking trains and work trains.

Railways Using Telephones Extensively.

	1	2	3	4	5	6	7	8
	Telg.	Phone.	Road oper.	Msg. wires.	S.	P.	F.	W.
Atch., Topeka & Santa Fe.	3,880	5,947	9,827	736	y	o	o	y
Atlantic Coast Line ¹	3,570	837	4,048	528	y	o	o	o
Baltimore & Ohio ¹	3,281	528	3,441	66	o	o	o	y
Bessemer & Lake Erie.....	1,994	232	2,238	177	o	o	o	y
Boston & Maine.....	1,994	232	2,238	177	o	o	o	y
Buffalo & Lake Erie (e)...	101	101	101	25	y	y	y	y
Buffalo, Roch. & P. ¹	175	427	427	...	...	...	...	...
Central Vermont.....	379	149	528	...	...	...	...	...
Chesapeake & Ohio ¹	591	998	1,555	...	...	...	...	...
C. & O. of Indiana ¹	262	262	262	...	...	...	...	...
Chicago & Eastern Ill.....	952	124	1,076	...	...	...	...	...
Chicago & Northwestern ¹ ...	6,487	1,786	7,897	...	...	...	...	...
Chicago, Burl. & Quincy...	6,219	2,946	9,022	...	...	...	...	...
Chicago Great Western...	1,180	290	1,470	246	30	11	30	y
Chicago, Mil. & St. Paul...	6,141	1,136	7,277	...	...	...	...	...
C., M. & Puget Sound ¹ ...	1,948	1,948	1,948	...	...	...	...	...
Chicago, Rock Island & P.	3,945	2,977	6,922	...	...	...	...	...
Chic., R. I. & Gulf.....	397	72	469	...	...	...	...	...
Chicago, T. H. & S. E. (e)	196	155	351	...	...	...	...	...
Coal & Coke.....	192	198	198	...	y	o	o	y
Copper Range.....	...	82	82	...	...	...	...	...
Cumberland Valley.....	...	207	207	203	y	o	o	y
Delaware, L. & W.....	...	974	985	...	...	...	...	...
Denver, N. W. & Pac.....	214	214	214	...	...	...	...	...
Denver & Rio Grande.....	2,500	52	2,552	...	68	6	6	y
Detroit & Mackinac.....	208	150	358	...	...	...	...	...
Detroit United (e).....	...	135	135	...	...	...	...	...
Duluth & Iron Range.....	...	150	150	...	...	...	...	...
Erie.....	2,271	217	2,488	...	y	y	o	o
Evansville & T. H.....	56	109	165	...	...	...	...	...
Florida East Coast ¹.....	...	522	575	...	38	o	o	y
Ft. Dodge, D. M. & S. (e)	...	159	159	...	...	...	...	...
Fort Wayne & W. V. (e)...	...	139	139	...	...	...	...	...
Georgia.....	58	245	303	...	...	...	...	...
Great Northern.....	3,224	3,881	6,905	338	302	42	o	17
Illinois Central.....	2,531	2,050	4,581	2,000	y	o	o	y
Yazoo & M. V.....	1,371	...	1,371	...	...	...	...	...
Illinois Traction (e).....	...	436	436	...	...	...	...	...
Indiana Union Trac. (e)...	...	313	313	...	...	...	...	...
Lehigh Valley ¹	633	800	1,382	800	150	150	375	75
Los Angeles Pacific (e)...	...	177	177	...	...	...	...	...
Louisville & Nashville...	2,988	1,229	4,217	1,146	y	o	o	y
Macon & Birmingham.....	105	105	105	...	...	...	...	...
Minn., St. Paul & S. M.	3,492	212	3,704	...	...	...	...	...
Missouri, Kan. & Texas...	2,105	759	2,866	...	...	...	...	...
Missouri Pacific.....	3,887	...	3,887	283	y	o	o	y
St. Louis, I. M. & S.....	2,849	315	3,203	345	y	...	...	...
New York Central Lines:								
Boston & Albany.....	10	377	387	200	23	o	o	2
Chicago, Ind. & So.....	...	304	304	...	y	o	o	y
Cleve., C., C. & St. L...	532	1,348	1,880	...	o	o	o	o
Lake Erie & Western.....	872	571	872	...	...	...	...	...
Lake Shore & M. S.....	337	1,600	1,578	2,000	y	...	...	y
Cleveland Short Line...	...	11	11	...	...	...	...	...
Dunkirk, A. V. & P.....	...	90	90	...	...	...	...	...
Lake Erie & Pitts.....	...	27	27	...	...	...	...	...
L. E., Alliance & W.....	...	88	88	...	...	...	...	...
Little Falls & D.....	10	4	14	...	...	...	...	...

Railways Using Telephones Extensively.

	1	2	3	4	5	6	7	8
	Telg.	Phone.	Road oper.	Msg. wire.	S.	P.	F.	W.
Michigan Central	443	816	1,259	188	89	o	8	y
N. Y. C. & H. River...	1,988	912	2,900	582	y	o	o	o
Toledo & Ohio Central..	118	277	395	...	...	...	...	...
New York, C. & St. Louis.	275	248	523	...	25	o	o	y
New York, N. H. & Hart.	1,885	121	2,006	633	5	o	o	o
New York, Phila. & N....	...	112	112	...	...	...	...	...
Norfolk & Western.....	709	982	1,881	783	96	15	...	y
Norfolk Southern	519	222	565	...	9	3	3	1
Northern Pacific	3,853	1,817	5,670	...	...	...	...	...
Northwestern Pacific	231	182	413	o	...	y	y	...
Pacific Electric (e).....	...	803	803	...	...	...	...	...
Pennsylvania	1,635	1,958	3,828	6,313	y	o	o	80
Cherry Tree & D.....	...	28	38	...	...	...	...	...
Cleve., Akron & Cin....	326	...	326	...	...	...	...	...
Grand Rapids & Indiana.	580	8	580	...	...	...	...	...
Northern Central	367	49	433	...	...	...	...	...
Pennsylvania Co.	1,211	131	1,342	...	...	...	...	...
Philadelphia, B. & W....	570	120	705	...	...	...	...	...
Pitts., C. C. & St. L....	1,421	2	1,423	...	...	...	...	...
Vandalia	827	...	827	...	...	...	...	...
West Jersey & Seashore.	229	84	313	...	...	...	...	...
Miscellaneous, P. R. R..	15	9	18	...	...	...	...	...
Pere Marquette	1,167	562	1,729	...	36	...	...	y
Philadelphia & Reading...	933	36	983	...	y	y	y	o
Pittsburgh, Shawmut & N.	176	138	251	...	...	...	...	...
Queen & Crescent Route:								
Cin., N. O. & T. P.....	197	138	335	138	y	25	o	o
St. Louis & San Francisco.	3,847	746	4,722	750	40	o	o	y
Seaboard Air Line.....	1,938	1,132	3,070	o	76	o	o	y
Southern	6,916	123	7,039	o	y	o	o	y
Southern Pacific:								
Arizona Eastern	331	184	371	...	...	...	...	...
Galveston, H. & S. A....	1,247	77	1,336	...	...	...	...	...
Southern Pac.; Pac. Sys..	5,370	713	6,083	578	50	y	y	y
Spokane, P. & Seattle....	392	150	542	...	...	...	...	...
Oregon Trunk .....	...	156	156	...	...	...	...	...
Union Pacific	2,768	606	3,374	3,040	79	26	32	12
Oregon Short Line.....	1,615	49	1,664	...	6	y	y	y
Oregon-Wash. R. & N....	1,540	180	1,725	...	...	...	...	...
Oregon & Washington...	195	113	250	...	...	...	...	...
Iiwaco .....	...	29	29	...	...	...	...	...
Corvallis & Eastern....	119	19	140	...	...	...	...	...
Virginian .....	...	468	468	...	...	...	...	...
Western Ohio .....	...	111	111	...	...	...	...	...
Wheeling & L. E.....	...	82	508	o	11	o	o	o
Canada.								
Canadian Pacific ¹ .....	...	5,000	...	1,084	o	y	y	y
Grand Trunk .....	...	y	...	...	24	o	o	y

¹The mileage of railway on which telephones are used in manual block signaling, as reported in the government bulletin was, on the first of January, 16,544 miles. To this we can add 824 miles on the Missouri Pacific, which has been thus equipped since January 1.

²The mileage shown in column 2 is larger than that shown in the government report, our information having been received in May, four months later than that furnished to the government. The Baltimore & Ohio will soon have an additional length of 235 miles equipped with two circuits, one for despatching and one for messages.

^e Electric railway.

^o None.

^y Items marked y indicate that our question was answered affirmatively, but that the number of telephones was not given.

Saving of Time of Trains.—Practically all of the roads replying say that much time is saved by the use of telephones, not only by reducing the time necessary for transmitting orders and messages, but also by having telephones accessible night and day at all meeting places, including "blind sidings." No precise statements are made in this connection, but on the Wheeling & Lake Erie, where telephones were introduced quite recently, a record was kept for 20 days, and during this period the time saved to freight trains was equal to 49 hours for one train and engine crew.

The following occurrences illustrating the effectiveness of telephones in minimizing delay not only of trains disabled, but of other trains which would have been held up, are given by the Lehigh Valley.

The engine of an extra westbound train became short of water, and it was necessary to cut the engine from train and bank the fires. Another extra westbound train was following. Both conductors used their "portables," giving the despatcher prompt notice, and thus enabling him to run a westbound passenger train, due about that time, around the stalled trains, with practically no delay.

The rod on the right side of the engine of an extra westbound train had broken. Conductor promptly notified despatcher by using portable telephone, enabling despatcher to keep traffic moving by using another track while the engine was repaired.

On the engine of a slow eastbound freight train a flue collapsed. "Portable" was used immediately, enabling the despatcher to get the train into a siding and avoid delay to an eastbound passenger train. This would not have been possible

had the slow freight been obliged to wait until it reached a telegraph office.

An eastbound mixed freight train was blocked in a siding on account of a car's derailment at that point. The despatcher, being notified, immediately sent an engine and caboose to transfer the passengers, arrange for steam wrecker, etc., all within a few minutes of the time the accident occurred. This accident would otherwise have caused a delay of several hours, as there was no telegraph office within three miles.

A westbound passenger train was derailed. The portable telephone was immediately put in service, and the despatcher arranged for steam wreckers and other assistance, within a few minutes after the accident had occurred.

An extra eastbound engine derailed. At once the train crew was instructed by telephone to pilot an approaching passenger train around the obstruction. This enabled the passenger train to proceed on time.

Work Trains.—The time saved by work trains is particularly valuable, the idleness of a large gang of men being costly. The conditions are, in general, alike on all lines. No statistics are given, except in the case of the Norfolk Southern, which reports that the efficiency of the work trains is increased 50 per cent.

Prevention of Derailments.—The following is a case in which possibly a derailment was prevented as a result of prompt information by telephone:

Members of a section gang on the Lehigh Valley, provided with a portable telephone, noticed a freight train moving eastward with a brake beam hanging down. The despatcher was immediately notified, the train was flagged at the next station, and attention was given to the damaged car.

On the Cumberland Valley telephones are installed at any point where one would be likely to be of service, and there are many at shelters of street crossing watchmen and in the residences of section foremen. Following are instances taken from the records of the transportation department.

Crossing watchman discovered brake rigging down on a car in train 84 passing Carlisle, October 14, and in reporting same averted a possible derailment.

Section foreman discovered brake rigging down on car 1,147 in train 102, June 6, while passing Greencastle.

Telegraph operator discovered brake rigging loose and brake shoes dragging on car in train of extra 1,533 while passing Waynesboro Junction, August 14.

A patrolman discovered a bent axle under car 943 in train 102, May 26, at 84 mile siding.

A crossing flagman at Chambersburg discovered an equalizing bar down, May 27.

Section foreman, Waynesboro Junction, September 7, 1910, reported a bent axle under a car in train 1,550 west.

Other roads report experiences of the same kind, but without giving details.

On a western road (name not given) a runaway freight car was seen by a conductor waiting at a blind siding, and he was able to telephone the despatcher in season to save a passenger train from being struck by the car, the despatcher ordering the train side tracked.

Portable Telephones.—The arrangements of the Lehigh Valley are typical. With each portable telephone there is an 18 ft. sectional "fish pole." These are being installed on all cabooses and baggage cars. Each telephone is fixed in a box under switch lock, and each is accompanied by printed instructions for use, and also blue print showing the location on the cross arms not only of the train despatching circuits, but of the other telephone circuits as well. The telephone case is 14 in. x 15 in. x 5½ in., with a leather handle; it comprises a hand set with transmitter and receiver, a condenser, two cells of No. 6 dry battery, a bell for incoming calls, and a five bar generator. The latter would be used if the train despatching circuit were out of order and it should become necessary to make attachment to another telephone line. When an attachment to the despatcher's

line is made it is unnecessary to use the calling apparatus, as the despatcher is on the line at all times. The despatcher, however, may call the train crew by the use of the "interrupter," should he need the train crew at any time while the connection is attached. Portable telephones and "fish poles" are supplied to bridge and rail laying gangs, track supervisors, work trains, tool trains, train masters and superintendents.

Costs.—\$100 a mile for a metallic circuit of copper, strung on poles already in position is a fair average of the cost of telephone lines, figures higher or lower than this representing lines in which other things have to be provided, or in which iron wire (for short lines) or a smaller size of copper was used. Portable telephones for use on cars cost usually from \$15 to \$25 each. One road reports that some of its portable telephones have cost as little as \$12, while others cost as much as \$35. Few roads have calling apparatus with the portable phones. The Southern Pacific reports that portable telephones of the railway company's design and manufacture cost \$20 each. One road reports its despatching circuit selector apparatus, in the despatcher's office, which is for a line of 40 stations, costs \$350. The equipment for each way station costs \$60.

Business Cars.—Telephones are supplied to one or more officers' cars on the Chicago, Rock Island & Pacific, the Grand Trunk, the Lehigh Valley, the Missouri Pacific, and the Union Pacific.

Phantom Circuits.—The "phantom" arrangement, by which two metallic telephone circuits are combined so as to provide a third conducting circuit, is in use on the Louisville & Nashville, the Pennsylvania, and the St. Louis & San Francisco.

Telephones with "Night Keys."—On the Cumberland Valley a number of stations are equipped with telephones fixed in boxes in the wall of the building in such a way that at night when the office is closed the conductor of a train may use the telephone without going inside the building. On this road conductors in charge of work trains are provided with telephones, which are not to be set up in the cars, but are fixed to a post at the side of the road near where the work is being done. Bridge repair gangs are provided with similar facilities.

The "Telegraphone."—The San Pedro, Los Angeles & Salt Lake having no regular telephone circuit, and doing all its despatching by the Morse telegraph, still provides all trains with the means of quick communication with headquarters in emergencies by the use of the "telegraphone." Every passenger train carries in the baggage car and every freight and work train in the caboose a portable telephone with the "fish pole" attachment, and these can be connected with the telegraph line at any point. The main line of this road is about 800 miles long, and stations about 100 miles apart are fitted with apparatus for receiving these telephone messages. An arrangement of this character is also in use on the Delaware & Hudson (250 miles of road) and on the El Paso & Southwestern.

Communication with Outside Telephones.—The telephone train despatching circuits on the Lehigh Valley are thoroughly intercommunicative not only as between despatching circuits but with the entire telephone system over the road. Each despatcher is equipped with special selective apparatus, so that by turning a key he can communicate in either direction with the train despatcher of the connecting division, thus allowing the freest interchange of information between the despatchers of the different divisions, each despatching point being thus kept in close touch with traffic approaching its territory. The official business cars of the company being equipped with telephones, officers when out on the line can get in touch with any superintendent on the road by asking the despatcher for an intercommunicative connection of the character desired.

Each despatcher is provided, under special agreement with the telephone company, with a connection to the private branch exchange of the general telephone system, so that the despatcher can get into touch with the chief despatcher, train master, superintendent, yard master, or any of the general officers, not only at their headquarters during the day but also at their homes at night.

Batteries and Electrical Details; Lehigh Valley.—The earlier

selective apparatus was of the local battery bell ringing type, while all of the recent installations are made with selectors using the main line selector battery to ring the bells, thus avoiding the necessity of renewing bell batteries when they become weak. This insures a uniform ring at all times and economy in the matter of battery renewal.

Storage battery has been provided throughout for selector work and for transmitters in despatchers' offices, thus providing a constant voltage and a uniform current to all selectors at all times, and economy in the matter of battery renewals.

For transmitter purposes at way stations three cells of No. 6 dry battery, four and one-half volts, are furnished, the transmitter batteries of the entire line being renewed at one time, approximately every four months, thus providing high efficiency and uniformity in transmission from the way stations.

At all selector way stations a swinging telephone arm, with a positive stop in both directions, is used, which, while leaving the arms of the operator entirely free in the handling of messages, train order blanks, train record books, etc., makes it necessary for him to talk directly into the transmitter at a uniform distance, thus insuring high and uniform transmission from every station. These arms are always thrown to a "cut off" position when not in use.

At each selector way office there is a test panel, permitting the cutting of the line, in either direction, in case of line trouble. As additional lines are erected they will also be cut into the same panel so as to provide for patching wires in case any of the circuits are in trouble.

All telephones, including those in booths at sidings, are equipped with lightning and sneak current protectors so as to reduce to a minimum the interruption from lightning storms and power wire crosses.

Notes.—The following notes are supplementary to the information given in the table.

Atlantic Coast Line.—Telephones are installed at *all* outlying sidings.

Chicago, Rock Island & Pacific.—On a length of 261 miles, both train orders and other communications are sent over the same circuit.

Cumberland Valley.—Telephones are installed at *all* outlying sidings.

Lehigh Valley.—On this road the siding telephones are equipped with bells for in-coming rings from the despatcher to be used by him in case it is necessary to hold the train crew, for a short time (if he is busy), each despatcher being equipped with an "interrupter" for this purpose.

Pennsylvania.—The figure in column 4 covers the whole of the Pennsylvania lines east of Pittsburgh and Erie. In addition to the 6,313 miles there shown, there is a length of 5,376 miles of circuits on which the telegraph and the telephone are used simultaneously. Nearly all of the circuits on this road used for telephoning are of copper wire. Telephones are furnished to foremen of track repairs in 44 cases; but in 25 of these this arrangement is temporary, as telephones are to be installed every half mile throughout that division.

Missouri Pacific.—Telephones are installed at *all* sidings on one division.

New York Central & Hudson River.—The mileage in column 4 represents one line from New York to Buffalo and a second line from New York to Albany.

Southern Pacific.—Telephones are provided on all trains running on those divisions of the road which are equipped with telephone lines.

Union Pacific.—At 57 booths and similar places not regularly attended by an operator, this company has register boxes equipped with train order blanks to enable conductors to receive train orders in the regular way. Each box has four rolls of blanks, three copies to be used by the trainmen and one to be left in the box. This fourth copy winds up on a roller in a locked compartment.

Oregon Short Line.—Telephones are provided on all freight and passenger trains.

MASTER BOILER MAKERS' ASSOCIATION.

Annual Meeting, Including Reports on the Brick Arch and on the Effect of Superheated Steam on Boiler Maintenance.

The sixth annual convention of the Master Boiler Makers' Association was held in Pittsburgh, Pa., May 14 to 17, George W. Bennett, presiding. Opening addresses were made by L. H. Turner, superintendent of motive power of the Pittsburgh & Lake Erie; William McConway, of McConway & Torley, and J. F. Deems, as noted in the *Railway Age Gazette* of May 17, page 1129.

LOCATION OF FEED WATER ADMISSION.

The committee which reported on this subject gave the results of a series of tests in which the water was admitted to the boiler at three different points. As a result of the tests and from the practical service which has been obtained from the Seddon method of injecting the water, the committee came to the conclusion that "feeding from the top near the front tube sheet was the most desirable location, because the mud and scale is better distributed throughout the barrel of the boiler and less lime and magnesia deposits are found adhering to the pressure side of the firebox plates than when feeding from any other location."

The discussion centered largely around the advantages of the Phillips check and the Seddon method of injecting the water. With the latter method the water is injected near the top and is thrown upward into the steam space in the form of spray; there is a shield or pan over the upper tubes in which a large portion of the incrusting solids are precipitated. This also permits the feed water to be heated to a higher temperature before it mixes with the water in the boiler. The use of this device on one road is said to have reduced the amount of boiler work in the engine house, cutting the number of boiler makers from 14 to 7, which has resulted in a 50 per cent. decrease in boiler maintenance. It has reduced the number of broken staybolts 35 per cent., and has increased the life of the fireboxes and flues.

It was frequently urged throughout the discussion that one of the best ways of securing good results from any method of feeding water was to washout and blowoff frequently. Instances were cited of engines on the same runs which varied greatly in the cost of maintaining the boilers, because in some cases the engineers would make frequent use of the blowoff, while in other cases this would be largely neglected. The consensus of opinion of those who took part in the discussion was that the use of a method of feeding which delivered the water in the steam space at the front end was of the greatest value.

APPRENTICESHIP.

J. W. L. Hale, superintendent of apprentices of the Pennsylvania, gave an illustrated address on this subject. It did not refer specifically to boiler-maker apprentices, but covered the general problem of apprenticeship. There are now 250 apprentices at the Altoona shops. This large number makes it possible to group them into classes and sections, thus securing better results than where the number of apprentices is so small that they cannot be thus grouped. Each apprentice receives four hours of school instruction per week, divided into two periods of two hours each. This instruction is given during working hours and while the boy is under pay. A certain amount of home problem work is also required. The apprentices work in the shop with skilled mechanics. The monthly reports of the boys' school work, taken in conjunction with the regular records of the shop foremen, give a satisfactory and reliable basis upon which to place the boys to the best advantage in the shop. There was no discussion of this paper.

WEAKEST CONDITION OF BOILER.

The committee, of which J. T. Johnston was chairman, presented a short report, the conclusion of which was as follows: "In conclusion your committee wishes to state that in its opin-

ion the elastic limit of the plates, braces etc., used in the construction of a boiler, should be considered, rather than the tensile strength, in maintaining boilers in safe working condition." There was no discussion of this report.

SPARK ARRESTORS.

Thomas Lewis presented a report on spark arrestors, in which he referred at some length to practical demonstrations in fuel economy which were made on the Lehigh Valley.

In the discussion a few blue prints were presented showing the practice on some of the roads, but the recommendation of the committee that the Master Mechanics' front end was entirely satisfactory was concurred in.

As for the size of the mesh of the netting that it is advisable to use, the practice of the engines running in the Adirondack region of New York state was cited. Here experiments had been made with nettings of three and four meshes to the inch, but the final size adopted was $2\frac{1}{4}$ meshes to the inch, using No. 11 wire. This arrangement seems to have almost put an end to the fires started by locomotives. Formerly the losses in the region amounted to hundreds of thousands of dollars every year, but last year they were not over \$10,000.

It is important that the diaphragm be arranged so that the front end is self-cleaning. If this is not done and cinders accumulate the smokebox must be made air tight or the cinders will burn, often resulting in a red hot front end.

THE BRICK ARCH.

An abstract of the report of the committee on Advantages and Disadvantages of the Use of Arches and Arch Pipes, of which George Wagstaff was chairman, follows:

The committee endeavored to determine as accurately as possible what the advantages of the brick arches are and the true value of these advantages. It has also been the endeavor to determine definitely the disadvantages of the arch and arch pipes and, as far as possible, the actual cost to the railways of these disadvantages.

Under advantages are the following items: 1, Coal saving. 2, Smoke abatement. 3, Flue protection or reduction in roundhouse flue work. 4, Improvement of steaming qualities under demands for maximum power. 5, Reduction of engine failures from leaky flues and low steam. 6, Reduction in flue stoppage. 7, Reduction in honey-combing of flue sheets. 8, Beneficial effect of the arch tubes on circulation and evaporation. 9, Effect on the life of a set of flues.

Under "disadvantages" may be listed the following: A, Cost of maintenance of the brick. B, Cost of maintenance of arch pipes. C, Detrimental effect, if any, on fireboxes. D, Delays, if any, to the turning of power at the engine house due to the presence of the arch in the firebox.

Coal Saving.—The replies are almost unanimous in stating there is a coal-saving, the average of the percentages given being 11.9 per cent. This percentage virtually checks or verifies the result of a very comprehensive test recently made to determine the coal saving of the arch. The test was conducted by a committee made up of representatives from the Pennsylvania Railroad, the New York Central and the American Locomotive Company on a Mallet engine on the Pennsylvania division of the New York Central. The conclusions were to the effect that the brick arch under the conditions tested gave a fuel saving of 11 per cent. We also have information on other well conducted tests which would indicate a coal saving of 12 per cent., or more. The coal saving reported by the different members varies from a slight saving to 25 per cent. This might seem inconsistent but for the fact that the conditions under which these various percentages were obtained are evidently quite variable. The per-

centage of coal saving varies largely with different degrees of intensity of the work. For very light work the percentage will be slight. For very high rates of work, or rather high rates of combustion, the percentage should be high. Again, when the coal is of a low volatile nature the effect of the brick arch on coal saving will not be so great, but with high volatile coal there is much for a brick arch to do and under such conditions it will show a high percentage of fuel saving. The committee feels that 11.9 per cent. may be considered a fair figure for the average conditions.

Assuming a locomotive working 330 days in a year, running 100 miles per day and making on an average of 20 miles per ton of coal, the tons of coal consumed per year are 1,650 tons; 11.9 per cent. of 1,650 tons is 196 tons; money value at \$2 per ton, \$382.

Smoke Abatement.—The composite report shows favorably for the arch from a smoke abatement standpoint, the average being 40 per cent. This again depends on the nature of the coal used.

Effect on Flue Work and Percentage of Reduction of Frequency of Calking.—Thirty-five report reduction in flue troubles. Two find additional flue troubles, while three report no effect. The average percentage of reduction in frequency of calking is 40 per cent. Just what money value this would represent we are not able to determine, but it would no doubt be considerable.

Steaming Qualities Under Maximum Demand.—Forty-five replies say that arches make the engines more consistent steamers; one reply states, no effect. This would indicate that arches were of decided value. Just what the money value would be we cannot state. However, it indicates that by using brick arches better schedules can be maintained, a thing very important to the railways in competing for high class business. It may mean less double heading, a thing much to be desired. A very small reduction in the number of cases of double heading would pay for much of the brick arch expense. It can mean more tons per train hauled and thus more ton-miles per ton of coal consumed.

Do Arches Tend to Reduce Engine Failures.—The vote on this item is 42 to 5, indicating that arches do reduce engine failures.

Do Arches Reduce Flue Stoppage.—The vote on this item is 37 to 10 favoring the arch.

Honey-Combing of Flue Sheets.—The vote on this is 29 to 9 in favor of the arch.

Effect of Arch Pipes on Boiler Efficiency, Circulation and Evaporation.—Replies indicate 23 favorable to and two neutral on these points. A previous report to the association shows a fraction over one per cent. gain of efficiency per arch per pipe. This gain would more than pay the arch pipe maintenance cost.

Effect on Life of Flues.—Thirty-two replies say life of flues is increased, two say the life is decreased and four say no effect.

As against the above advantage we have the possible disadvantages as follows:

Detrimental Effect on Life of Firebox.—Five claim that the arch with arch pipes prolongs the life of the box, 12 that the life of the firebox is shortened, while 14 report no effect, less than half reporting detrimental effects. A careful review indicates that the experience of those reporting detrimental effect is largely in connection with brick arches supported on studs. It would, therefore, indicate that the effect of the arch on the life of the firebox would depend on the style of the arch used. It would indicate that arches of the proper design supported on tubes have no bad effect on the life of the firebox. At any rate, we believe that we may safely draw the conclusion that the beneficial effect of the arch on the flues will at least offset any possible detrimental effect which the arch may have on the firebox.

Are Engines Held Langer at Terminals on Account of Arches.—The vote on this item is 29 to 12, indicating that less than 30 per cent. of the members reporting find that there is a

delay to the turning of power due to brick arches. Several members report less delay to engines equipped with arches. It would seem that the style of an arch has some bearing on this point. One man reports that there is no delay if sectional arch is used. The majority of those reporting no delays are using the sectional arches. Your committee, therefore, feel justified in saying that the delay in the turning of power claimed by some, is not an unsurmountable disadvantage. There are good grounds for argument that in the majority of cases this belongs on the other side of the ledger, due to 40 per cent. reduction in roundhouse flue work.

Cost of Maintaining Arch Pipes.—The recapitulation shows an average of \$4.36 total to renew one arch pipe, and the average life of an arch pipe to be 14 months. With four tubes in an engine there would be an average renewal of one tube every three and one-half months. At a cost of \$4.36 each the arch pipe cost per year in a box equipped with four tubes would be \$15.26. This, we believe, represents a fair average for the cost of maintaining arch pipes.

Cost of Maintenance of Brick Arches.—The replies gave us no line on the cost of maintenance of brick per 1,000 engine miles. We have data, however, showing that the average life of a set of brick in passenger service is 5,490 miles, in freight service 4,425 miles, and in switch 6,500 miles. Assuming 33,000 miles per year as the average for an engine, it would require about 6 arches per year for passenger engines, and about eight arches per year for freight engines. Not having replies on the cost of arches, we are obliged to make some assumptions. We know from other sources that the cost per 1,000 miles for arches in wide firebox locomotives will be between \$1 and \$3. These wide limits are necessary on account of the wide differences in conditions throughout the country. The condition of the water has a decided effect on the life of an arch; the quality of the coal also has a decided effect and the intensity or degree of severity of the service greatly affects the life of the arch. Assuming \$2 per 1,000 engine miles as a probable average and a mileage of 33,000 miles per year, we have for the cost of brick, \$66 per year per locomotive. Add to this the brick arch labor, given as an average of \$1.70 per month, we have \$20.40 for brick arch labor per locomotive per year; add to this the cost of maintenance of arch tubes which we found above to be \$15.26 per locomotive per year; and figuring the storekeepers' cost at 2½ per cent. as the average, we have a grand total of \$103.31 for the average cost for the yearly maintenance of brick arches and arch pipes in an average modern locomotive.

Compare this with the money value of the advantage of the brick arch, which we found to be on coal saving alone, at about \$392 per locomotive per year with the coal at \$2 per ton. Subtracting from these coal saving figures the total cost to maintain the arches, we have in districts where coal costs \$2 per ton a net of \$275 per locomotive per year.

To sum up, weighing the advantages against the disadvantages, it appears from the replies received that brick arches are giving a very good account of themselves on 26 out of the 30 roads reported on.

Many roads have recently adopted the use of brick arches and superheaters, not so much from a desire to burn less coal, but in order to obtain more steam of a better quality, due to the necessity of having maximum sustained boiler power for a minimum of weight and operating expense.

The committee's recommendation, therefore, may be expressed as follows: The improvements in brick arch construction and the advancement in the art of boiler maintenance, including care of arch pipes, render the disadvantages of the use of arches so small in comparison with the advantages derived as to warrant the general use of brick arches in soft coal burning locomotives.

Discussion.—The discussion of the advantages and disadvantages of the brick arch proved to be the liveliest and most ex-

tensive of any of the subjects considered at the convention. It seemed to be quite generally conceded that if the brick arch and arch tubes were properly applied and maintained very little trouble resulted and that the benefits derived far exceeded the cost of installing and maintaining the arch. The use of four supporting arch pipes and the sectional arch were strongly recommended.

Some members seemed to think that the arch would do very well in good water districts but that where the water was bad there would be no end of trouble. This was from men who were not using the arch and they were met by statements from men who were in the worst of the bad water districts to the effect that they would work all right in any kind of water provided they were given the proper attention. They are used where the water will deposit $\frac{1}{4}$ in. of scale in three months.

The bagging of the arch pipes was discussed at length and it was suggested that if the braces for the front tube sheet were placed so as to allow a free circulation of water to the arch tubes, making it possible to keep the tubes filled at all times, there would be no trouble. The greatest difficulty with the arch tubes seems to be where the water has a tendency to foam.

On the Lake Shore the saving in fuel, due to the use of the arch, amounts to from 8 to 10 per cent. On another road having 110 locomotives it is estimated that \$50,000 a year is saved by the use of the arch. The attitude of the boiler makers toward the brick arch has changed since the sectional arch has been introduced, which can be easily removed to allow repairs to be made. Usually the removing and replacing of these bricks is done by regular men who are assigned to the work. The value of the brick arch as a smoke preventer was conceded, but in order to get the best results in this respect it must be properly installed and cared for.

SUPERHEATED STEAM AND BOILER MAINTENANCE.

A committee report on this subject was presented by T. W. Lowe, chairman. The fire tube type of superheater only was considered. The large holes in the front tube sheet are generally drilled about $\frac{1}{4}$ -in. larger in diameter than the body of the flue, the flue being swelled hot to fit that end before application, thus economizing on the labor attached to removals. The large holes in the back tube sheet are drilled smaller than the main flue, which is swedged several inches back, thus providing an abundance of water space at the firebox end, as well as ample material between the tubes, to prevent cracking of the interstices during the setting and maintaining of the flues. No copper ferrules are used to surround these large flues in the back tube sheets, and they are either welded in place or rolled to a joint by using four rollers in the tube expanders, then lapping and beading both ends of the flues with a suitable sized beading tool to take care of the thicker flue.

These large flues are handled in the shops under the same general methods that are followed with smaller flues; the safe ends are welded with a proportionately heavier roller tube welder, and the firebox end of the flue is swedged with a hydraulic push swedging machine or suitable top and bottom die. During six years' experience we have had no weld failures, and are practically free from leakage in service because of reasonable attention, such as stopping all leaks after the fire is drawn, whether reported leaking on arrival at the terminal or not, and, further, by blowing out all cinders with air.

The working steam pressure on superheated engines is generally 180 to 200 lbs., and on light power 160 lbs. The same size engines and boilers under the two former pressures, operating in good and bad water, have not yet shown any marked difference in the cost of boiler maintenance, and unless there is a saving in machinery expense with the low pressure there does not appear to be any good reason why the 200-lb. pressure engine is not better and more powerful than the 180-lb.

Superheating has not reduced the mileage run between washouts and, although the firebox space is found in better condition, we cannot accurately compare the quantity of scale and

mud collected between washouts; yet we are satisfied there is a better all-round condition and decreased foaming of the boilers in service.

Competent authorities state that there is a saving in fuel averaging from 10 to 25 per cent. in favor of superheating, the fluctuations during the tests being due to conditions. This is accompanied with a corresponding decreased consumption of water, and a longer life for flues and firebox plates, but because of many other mechanical improvements, which are under experiment at the same time, no accurate statement can be given to show the advantage derived from each; notwithstanding all this there is sufficient proof that there is a much greater percentage of benefit derived from superheating on locomotives than has been attributed to any other known mechanical device introduced on locomotives for many years, and its relation to the upkeep of the locomotive boilers is such, that with ordinary care in the application of the device and proper maintenance in service, the boiler is generally benefited.

During the severe frosty weather in northwestern Canada the superheater engines developed less flue and boiler failures compared to former saturated steam engines, which of itself is an economy not to be overlooked.

Discussion.—The discussion touched lightly on the relation of superheat to the upkeep of the boiler and centered almost entirely on the methods used in applying and replacing the large tubes that are used to carry the superheater units.

CRACKING OF TOP FLANGE OF TUBE SHEET.

In a paper on the best method of staying the front portion of the crown sheet on radial top boilers to prevent cracking of the flue sheet in the top flange, J. W. Kelly advocated the use of flexible stays. Some roads use four rows of such stays near the flue sheet while a few use flexible stays entirely for the crown sheet. T. W. Lowe, in a paper on the same subject, recommended a radius of 3 in. for the tube sheet flanges and that the root of the flange should be at least 4 in. from the edge of the tube holes.

OTHER BUSINESS.

The following officers were elected for the ensuing year: President, M. O'Connor, general foreman boiler maker, Chicago & North Western; first vice-president, T. W. Lowe, general boiler inspector, Canadian Pacific; second vice-president, James T. Johnston, assistant general boiler inspector, Santa Fe System; third vice-president, Andrew Green, general foreman boiler inspector, Big Four; fourth vice-president, Dan Lucas, general foreman boiler inspector, Chicago, Burlington & Quincy; fifth vice-president, John Tate, general foreman boiler maker, Chicago, Milwaukee & St. Paul; secretary, Harry D. Vought, New York; treasurer, Frank Gray, foreman boiler maker, Chicago & Alton. For members of the executive committee: B. T. Sarver, foreman boiler maker, Pennsylvania; A. Lucas, foreman boiler maker, Chicago, Milwaukee & St. Paul; W. H. Laughridge, general foreman boiler maker, Hocking Valley.

It was announced that Chicago had been chosen for the next place of meeting.

At the closing session a resolution was adopted asking the secretary of the navy to name the 500-ft. repair ship that is to be built for the navy, the *Oliver Evans*, in honor of the eminent early worker in steam navigation.

The entertainments for the week included a reception and dance on Tuesday evening. On Wednesday the association was the guest of the Carnegie Steel Company and the National Tube Works on an excursion, visiting a number of the plants of these companies. Wednesday evening there was a theatre party. On Thursday there was a ladies' euchre party in the afternoon and a banquet in the evening.

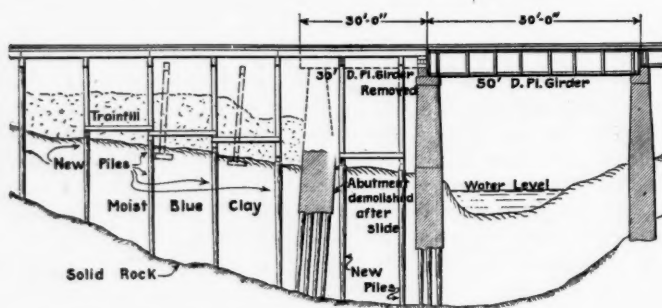
Among the companies who made exhibits in connection with the convention were the following:

Champion Rivet Company, Cleveland, Ohio.—Rivets. Represented by D. J. Champion and W. H. S. Bateman.
Chicago Pneumatic Tool Company, Chicago.—Pneumatic tools. Represented

by George A. Reese, C. E. Walker, Thomas Aldcorn, A. C. Andreson, A. M. Andreson and H. S. Hunter.
 Cleveland Steel Tool Company, Cleveland, Ohio.—Punches, dies, rivet sets and chipping chisel blanks. Represented by J. F. Doolittle, R. J. Venning and V. D. Gilmore.
 Flannery Bolt Company, Pittsburgh, Pa.—Tate bolts. Represented by J. Roger Flannery, B. E. D. Stafford, Thomas Davis, C. L. Hastings and William M. Wilson.
 Independent Pneumatic Tool Company, Chicago.—Thor pneumatic tools. Represented by G. A. Gallinger, John P. Bourke, G. C. Wilson, Walter A. Johnson and W. R. Gummere.
 Parkersburg Iron Company, Parkersburg, Pa.—Charcoal iron boiler tubes. Represented by George Thomas, 3rd, W. H. S. Bateman, C. L. Hump-ton, J. A. Kinkead, John H. Smythe and H. C. Hunter.
 Vulcan Engineering Sales Company, New York.—Hanna riveters. Represented by A. F. Ehrenhaft.

EMBANKMENTS AND FOUNDATIONS ON THE TORONTO-SUDBURY BRANCH OF THE CANADIAN PACIFIC.*

The Toronto-Sudbury branch of the Canadian Pacific was built in the years 1905-1909. The construction standards were very high, the intention of the company being to insure a thoroughly solid road bed, rather than to keep initial expenses at a minimum. As the greater part of the 225 miles of this line ran through a rock and muskeg country, there was frequently some difficulty in attaining this result. The general mode of procedure through the rock country was to make the rock cut only about a third of the embankment, as this quantity of rock would have sufficient weight to cut its way vertically through the mattress, and as soon as bottom was reached the remainder could be made by train filling. The efficiency of this method of forcing the sink holes through is shown by the fact that, train filling once completed, the percentage of derailments has been at least as low on this new road bed as on that of sections 20 years old or more. This brings up an important question. If the intention is to have the weight of the rock cut its way through the mattress, and as it is only when it has done so and reached solid bottom that the earth filling becomes really effective, would it not be advisable, in some instances, before placing the rock fill, to cut two longitudinal ditches through the mattress parallel to the center line in case of a 30 ft. embankment, about 40 ft. apart, and thus allow that whole section to sink vertically without deforming the surface at the side? Al-



Abutment Demolished by Slide.

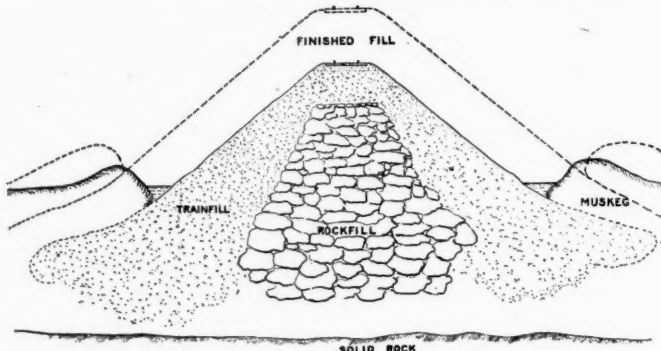
most every case of deformation is caused by the sand or gravel floating sideways, and it does not become solid for some time.

Depressed temporary grades of 3 per cent. were allowed. In many cases small hillocks of rock were cut away to allow the temporary grades to descend to the center of the larger gulleys.

At mile 124, during train filling, a low rock embankment, while carrying an engine, gave way suddenly, and the engine sank with such force as to shear the nuts in the track for a distance of 1,000 ft. or more. Between miles 112 and 142 a number of embankments were train filled from temporary trestles, and little trouble was experienced, although in many cases it was found

necessary to lower the level of adjacent small lakes in order to give more solid bearing to the toes of the slopes.

At Richmond lake, mile 101, south from Romford, the lake level was about 50 or 60 ft. below the level of the track. A rock embankment rested firmly on the solid rock below, but was not carried up to grade, a trestle being used above water level. The water would probably seep through the rock fill, but, in the event of its not doing so, it would easily flow through the trestle at high water. At mile 76, south from Romford, occurred one of the heaviest train fills of the line, the depressed grade being no less than 25 ft. at a maximum below the final grade, and as it was necessary in filling to cover the toes of a rock embank-



Depressed Embankment, Showing Sideslip.

ment up to 30 ft. in height, at least a quarter of a million yards of earth must have been used in this one-half mile of fill.

At mile 75.5, south from Romford, a temporary trestle beside a lake had been train filled, but the water had apparently dissolved the embankment and caused lateral slipping. The lake was small, and the lowering of its level about 4 ft. left the toe dry and firm.

In many instances where a comparatively dry muskeg was to be crossed, provision was made for thickening the dry supporting mattress by ditching and lowering the level of the water table. This was generally effective, provided there was solid soil in the mattress, but not invariably. At mile 70.5, from Romford, the track crossed a muskeg about 2,000 ft. long and from 20 to 40 ft. deep, on an embankment about 4 ft. high. A drainage ditch was dug, leaving the water table only about 4 ft. below the level of the surface soil. The track crept very badly and made "sun kinks," elevations taken during the passage of a train showing track undulations of one or two-tenths. The track was made safe for traffic and prevented from creeping by the substitution of 14-ft. bridge ties; later it was diverted to a side hill of solid rock and made thoroughly solid.

At mile 66.7, south, in order to make secure a muskeg, which for its length gave considerable trouble, a depressed grade was built, with a rock embankment about 10 ft. high, the lowest point of which was a maximum of about 20 ft. below the intended finished grade. In this case, although soundings showed a depth of 50 ft. or more to bed rock, the weight of the rock embankment was not in itself sufficient to slice through the surface mattress. This was somewhat unfortunate, as it was always found that although earth alone would eventually reach a firm foundation, yet owing to its specific gravity being so low, it had a great tendency when placed by train filling, to move horizontally rather than vertically, causing the mattress to bulge upwards for some distance out from the toes of the slope.

Although this sink hole had a length of only 600 ft. and had to be lifted to a height of 20 ft. above the depressed grade, a fill of 30,000 yds. raised it only 3 ft. Fortunately, by the use of spreaders, the embankment while sinking retained a good surface and alinement, and no difficulty was experienced in running passenger trains over this temporary velocity grade.

One of the abutments of the South Nascoutyong river bridge was carried to a depth of 10 or 15 ft. below the surface of the ground, and piles were then driven to bed rock, about 20 ft.

*From a paper by A. C. Oxley, read before the Canadian Society of Civil Engineers.

further. Back of the abutment was a temporary trestle about 30 ft. high resting on mud sills, the soil being an alluvial clay which was kept moist by the presence of a stream less than 100 ft. away. No trouble was experienced with the abutment until train filling had proceeded for some time on the temporary trestle, when the earth filling caused a flow of the clay sub-soil, and although the bases of the piles remained in their places on bed rock, the flowing of the clay caused the abutment to tilt forwards, necessitating its demolition. No further attempt was then made to fill the embankment, but piles were driven and a trestle constructed, both in place of the temporary trestle, and also between the abutment and the next pier, the new trestle replacing a short girder span.

TESTS OF JACOBS-SHUPERT FIREBOX.

A progress report of the comparative tests being made at Coatesville, Pa., between two boilers, one with a radial stay firebox, and the other with a Jacobs-Shupert firebox, has been made by Dr. W. F. M. Goss, under whose direction the work is being conducted. This report is as follows:

"The tests of Series A, have been entirely completed, with results which in general terms are set forth below.

The Boilers.—"Both boilers are identical in their general dimensions which are as follows:

Outside diameter of shell of boiler at front end.....	70 in.
Diameter of shell at throat.....	83 3/8 in.
Number of 2 1/4-in. tubes.....	290
Length of tubes.....	18 ft. 2 in.
Inside length of firebox.....	109 3/4 in.
Inside width of firebox.....	76 3/8 in.

"The purpose of the tests of Series A was to determine for each boiler the evaporation from the firebox and from the tubes separately. To make such a determination possible, the back-tube sheet was extended in all directions to the outside of the boiler, thus forming a diaphragm completely separating the water-space on the two sides of this tube-sheet. By this device each boiler was made in effect two boilers, the heating surface of one being all portions of the firebox, excepting the front tube-sheet, and the heating surface of the other being the tubes and tube-sheets.

"In carrying out the tests, each compartment was supplied with weighed water as though it were a separate boiler. The quality of the steam delivered from the firebox end and from the barrel end was determined independently, the purpose being to determine with the highest possible accuracy the heat delivered through the walls of the firebox and the heat delivered through the flues. The heating surface of the two boilers is as follows:

	Radial-Stay Boiler.	Jacobs-Shupert Boiler.
In the firebox.....	179.2 sq. ft.	201.9 sq. ft.
In the barrel.....	2,805.1 sq. ft.	2,806.5 sq. ft.
Total for both parts of the boiler....	2,984.3 sq. ft.	3,008.4 sq. ft.

Tests with Oil.—"A series of oil-fired tests have been run on each boiler. Three different rates of power have been employed in each series, the rate of fuel consumption ranging from 800 lbs. to 2,100 lbs. of oil per hour. The total water evaporated from both the firebox end and the tube end of the boilers has ranged from 10,000 to 24,000 lbs. per hour, the evaporation per pound of oil being approximately 16 lbs. in the tests of lowest power and 14 lbs. in those of highest power. In all tests a surprisingly large percentage of the total work was done by the firebox. This percentage was greatest when the rate of power was lowest. Speaking in general terms, at low rates of power from 45 to 50 per cent. of the total heat transmitted by the boiler is absorbed by the firebox. With increase of power the percentage falls, but the lowest value thus far obtained is approximately 34 per cent.

"As the heating surface of the firebox is a comparatively small fraction of the total heating surface of the boiler, it is evident that heat is transmitted from the firebox at rates which are extremely high. For example, results of a number of tests show the evaporation of more than 50 lbs. of water per square foot of

firebox heating surface per hour, which rate of evaporation is equivalent to the development of more than 300 horse power to the firebox alone. In estimating the significance of these results, it should be remembered that in the experiments, the firebox virtually constituted a boiler by itself, that it had no more water about it than the normal locomotive firebox, and that it could not benefit by the circulation of water from the forward end of the boiler backward into the water legs. The fact that fireboxes subjected to such conditions could be worked at the rate of power stated, is suggestive of new possibilities in boiler design. The full development of these data will make of record facts with reference to the distribution of work between the firebox and tubes of a modern locomotive boiler which have never before been determined.

"The experimental results have not yet been sufficiently studied to permit a final statement to be made concerning the relative performance of the radial-stay boiler and the Jacobs-Shupert boiler. It appears, however, that the absorption of heat by the Jacobs-Shupert firebox is somewhat in excess of that absorbed by the radial-stay firebox, and that taking the boilers as a whole, the Jacobs-Shupert boiler is slightly more efficient.

Tests with Coal.—"The oil-fired tests already described have been duplicated by a series of coal-fired tests. The results obtained, so far as they refer to the distribution of work between the firebox and the tubes, and to the relative performance of the radial-stay boiler and the Jacobs-Shupert boiler, are in entire agreement with those obtained from oil."

The tests for strength under low water conditions in which each boiler will be subjected to a progressive series of tests until the destruction or serious deformation of the firebox occurs, will take place at Coatesville, Pa., on June 20, 1912.

It has been for many years the intention of the Khedive of Egypt to extend the Khedival railway, through the Mariut desert as far as Sollum, and thus shorten the road to Egypt. The Khedival railway already extends 140 miles westward from Alexandria, through the desert. Its present terminal is Sidi el Haggag, quite near to the port of Mirsa Matru. It has very much facilitated the entrance to the northwestern part of the Lybian desert, and it renders more accessible many ancient ruins, especially the Marble City of Mariut and the City of Menas; and stimulates the traffic between Barka and Alexandria. The material has been for the most part delivered by German and Austrian firms; and a few years ago there was talk of German capitalists buying the road. This purchase would have been of great advantage to German capital, but now the Egyptian government will reap the profits. When the line is finished to the Gulf of Sollum, and has been strengthened and double-tracked, there will be fast trains to and from Cairo, and steam connections at Sollum. The sea voyage between Italy and Egypt will be shortened by a full day; and the new route will be the shortest to the Orient. For the express trains between Sollum and Cairo nine hours will be sufficient; and this route passes through interesting and almost unknown districts of Egypt. The railway starts at Wardian, the proposed new western port of Alexandria. A magnificent station building has been erected after the plans of Chief Engineer Gustav Kayser, who also did the greater part of the surveying of the line. In order to build cheaply, the Khedive made use of native soldiers as laborers. The line runs through the limestone quarries of M, directly towards Lake Mareotis, which it crosses on a dam only wide enough for the track and the telegraph poles. After the train has passed this dam, about an hour's run, the line runs partly parallel with the shore, to the Arabian gulf. It then runs southwest through the desert to the important caravan station of Bir Haman; then turns westwards towards the gulf in order to run nearer to the coast. The special strategic importance of this railway line for Egypt has caused the Egyptian government to buy it from the Khedive. The negotiations are of quite recent date.

RAILWAY STOREKEEPERS' ASSOCIATION MEETING.

Abstracts of Reports and Discussions of Interest to
Executive, Mechanical, Engineering and Purchasing Officers.

The ninth annual convention of the Railway Storekeepers' Association was held at the Hotel Statler, Buffalo, N. Y., May 20-22. After an address of welcome by the mayor of Buffalo and remarks by J. A. Waterman, the past president, and by E. Chamberlain, of the New York Central Lines; W. F. Jones, general storekeeper of the New York Central & Hudson River, the president of the association, made an address. Special mention was made of the work of the committees, and particularly of the tinware committee, which had been in conference with similar committees of the Master Mechanics' and Master Car Builders' Associations for the purpose of standardizing tinware. It is believed that the action of this committee, if accepted, will result in the adoption of standards that will be of great benefit both to the railways and to the manufacturers. In fact, some roads are waiting for this report before ordering large amounts of tinware.

The membership of the association has been increased, the total number, according to the secretary's report, being 625.

ACCOUNTING.

Although the committee on accounting requested more time in which to prepare its report, the subject was thoroughly discussed. There is a wide difference among the railways in the methods of keeping the accounts. For instance, on the Lake Shore & Michigan Southern the accounting is done by a separate department, which is outside the jurisdiction of the supply department, while on certain other roads the supply department has charge of the accounting. The former method relieves the supply department of applying the cost of supplies direct to the operating cost sheet. The Chicago, Burlington & Quincy operates on the same principle as the Lake Shore, except that the supply department puts the price of the material on the bill as it is given out.

RAILWAY SALVAGE.

The subject of railway salvage or reclaiming of scrap material was considered by the committee on recommended practices, of which H. C. Pearce, general storekeeper of the Southern Pacific, is chairman. A separate salvage department was advocated, which should come under the direct control of the supply department. This new department should gather all obsolete and scrap material and arrange for its reclaiming or selling. It should be run according to a definite and well-planned system, so as to prevent any unnecessary handling. It was estimated that 10 per cent. of the total cost of the material could be saved. Three inspections should be made of the material before it was scrapped; the first by the workmen overhauling the equipment for repairs; the second by sufficiently trained men at the scrap piles, and the third as it is being loaded on to the cars for shipment. It was claimed that considerable money is lost in rails and ties which could oftentimes be reclaimed by shortening the rails and by using the ties for secondary track and fence posts. E. J. McVeigh, Grand Trunk, who is a member of the committee, also read a paper on the subject. He mentioned many ways in which material is lost that may be reclaimed. He said that 50 per cent. of all the loss and waste was the result of poor education and the balance was chargeable to "pure cussedness." As an example of the former he mentioned the insufficient storage facilities and the difficulty of making some officers see the necessity for them. As to the latter, he referred to the way in which the employees handled their supplies. He closed by saying that the subject of salvage has been left too much in the hands of the different departments, and that the lack of an organized system was responsible for a large part of the waste.

Discussion.—The discussion brought out the value of the

classification of scrap material as drawn up by the previous committees of the association. H. E. Rouse, general storekeeper, Chicago Great Western, said that by following this classification his road had received a large increase over previous prices of scrap and that the extra cost of maintaining the system was more than paid for in this way. D. Kavanagh, general storekeeper, Chicago, Rock Island & Pacific, said that the cost of classifying and reclaiming scrap on that road, using this same system, was only nine cents per ton. The shipment of all scrap to a general overhauling point was criticised by some as not being an economical proposition, since the cost of transportation would be liable to exceed the money saved by the reclamation, but it was conceded that where possible it was better to do this than to maintain salvage crews at each shop. The location of the general overhauling point should be governed by the geographical location of the scrap market. On the Chicago, Burlington & Quincy the reclaiming is done at the shops, the mechanical department co-operating with the supply department in picking out the usable material, the rest being sent to the general scrap docks at Havelock, Neb.

The committee on scrap classifications made a few changes that were found necessary on account of the increasing use of steel. However, no change was made in the classification of No. 1 scrap, which at present includes both steel and iron. This combination is severely objected to by many of the scrap purchasers.

STANDARDIZATION OF GRAIN DOORS.

D. Kavanagh, chairman of this committee, reported that the committee had conferred with the committee of the General Superintendents' Association on reclamation as well as the standardization of grain doors, and with slight modifications had not found any reason to change the recommendations which were made in the previous report. It is still maintained that doors 20 in. wide by 7 ft. long are the most serviceable, and can be used in any freight car suitable for carrying grain having a standard width of door. It was agreed after conference with the committee of the General Superintendents' Association and with Mr. McNulty, the reclamation re-cooperage agent, that better results can be obtained from grain doors constructed with the two end cleats set out flush to the end of the door, instead of 6 in. back from the end as previously recommended. There is more nailing stock at the end of grain door, making it more substantial and less liable to be damaged in removing it from cars. For railways buying grain doors made of hard woods, it is not believed necessary to have a complete double door, i. e., a door made with a full double thickness of lumber all the way through, single thickness hard wood doors being equally as strong and serviceable as double doors made from soft wood, if all cracks are properly cleated.

Roads that can purchase hard wood doors to advantage, constructed as above described, will save approximately \$25,000 to \$30,000 a year where large quantities of these doors are required. In order to have the marking of grain doors uniform on all railways, it is recommended that on the inside the door should be properly stenciled with the initials of the railway in large letters, and also the name of the manufacturer of the grain door, this latter information for identification purposes. On the opposite side of the door, that is, the outside, should be stenciled also in plain large letters—"This Side Out—Return to A. B. & C. R. R."

STATIONERY.

The report of the committee on stationery was read by H. E. Rouse, Chicago Great Western, chairman. Answers to a circular letter to the members showed that 14 roads gave the general

storekeeper control of stationery and 27 did not. Answers to another question showed a difference of opinion as to whether the stores department should handle the stationery. Eighteen roads require their line officers and agents to order the stationery supplies 30 days ahead of delivery; 14 roads, 60 days; and 4 roads, 90 days. The majority of the roads replying to the circular thought that the division superintendent should approve station agents' requisitions. Two roads operate printing plants and 37 do not. Eighteen thought that it would be practical to operate a printing plant limited to certain classes of work, while 19 did not; eight believed it economical to provide the printer with paper stock and electrotypes plates, while 28 did not. The committee was continued for another year.

LINE INSPECTION.

A paper was presented on this subject by J. H. Callaghan, Canadian Pacific, of which the following is an abstract: Line inspection offers a big field for the head of the store department. On some lines there are no less than 50 places where materials are carried, all of which come under the care of the various division storekeepers, and while these form a portion of the line inspection they do not afford anything like the field to work in which is offered by the line proper, or such places as engine houses, car repair yards, bridge and building department shacks, construction yards, steamship, ferry and elevator terminals, freight and baggage sheds, etc., in fact, wherever company material is apt to be found, whether new, second-hand or scrap. These are the places where the general storekeeper with the inspection team can do a lot of valuable work.

The inspection team should consist of the general manager, or an officer of equal rank, the general master mechanic, the master car builder, and the general storekeeper. The general manager because he is in charge of all lines on which such inspections are made and decisions are arrived at on the ground. The general master mechanic because all division master mechanics are subject to his instructions. The master car builder for similar reasons, the various division car foremen being subservient to him; and the general storekeeper because he is the custodian of the materials no matter where located.

A rough outline of the work of inspecting is as follows: The general manager watches the line from the rear end of the car, noticing station buildings, cattle guards, fencing wire, switch material, ties, etc., not properly cared for, and speaks to the general superintendent of the division together with the superintendent in charge of the district as to these conditions and directs as to their proper disposition. The general master mechanic notices 160 to 180 per cent. locomotives hauling regular trains where an engine of less capacity would answer the purpose and arranges at once with the division master mechanic for the proper disposition of this misplaced power. While in the engine houses and machine shops he looks into the work of proper upkeep of machines and engine house practice. The master car builder covers very much the same ground.

There was a time, and no doubt is yet, when officers in making inspections were frequently misinformed. They received a lot of unreliable and erroneous information simply because the information was given in such a manner that unless an officer was conversant with the details, for lack of time on the ground many of them were accepted as genuine. With an inspection team of this sort these difficulties could be cleared up and the correct condition of affairs learned. It is not directly with the stores department proper or material in the care of the department's employees at division or other points where the accumulations of new, second-hand or scrap materials may be found, that the general storekeeper does his best work. These latter accumulations are tabulated by the department's own men and proper records are kept of them, in addition to which the department's inspectors are constantly on the line following them up, their work being mainly directed to the keeping down of surplus stock under the charge of store department employees. They also report any materials which

they note on these inspections as being carried in excess by other departments, and copies of their reports are sent to the general superintendents of the divisions on which such inspections are made, but the results in these cases are not always satisfactory, so that it is left to the inspection team to put the finishing touches on them.

A feature of these inspection trips and one which tends to enhance their value is that meetings are held frequently of all officers of the different grand divisions at which the inspection team aim to be present. The efforts made and results affected, particularly as applicable to the material question or work done by the general storekeeper, are usually brought up at these meetings and detailed reports of such savings as have been made are usually illustrated in dollars and cents.

Attention is called to the following statement made by Mr. Yeoman in an article in the *Railway Age Gazette* of February 9: Until the idea is fully recognized and put into actual practice that the general storekeeper is the actual custodian of company materials, the economy which he can affect, if an independent officer, will be largely dwarfed if unnecessary interference is permitted.

Discussion.—The whole idea of line inspection was considered a necessity, and if an inspection team, such as described in the paper, is impracticable, a team should be made up of officers representing those mentioned. Various systems of inspection were mentioned, among them the monthly supply car trips on the Southern Pacific, which D. D. Cain described. This has been fully described heretofore in the *Railway Age Gazette*.

INCREASE OF STORE DEPARTMENT EFFICIENCY.

A paper was presented by H. C. Pearce, Southern Pacific, on how the efficiency of the store department may be increased. An abstract follows:

Efficiency is simply doing the thing we are required to do well, in the most simple and direct manner. If the railway storekeepers are not as efficient as they should be (quoting from Mr. McVeigh's letter in the *Railway Age Gazette*, January 5, 1912), "the fault lies more in the foundation than in the superstructure."

The store department, which is better named the supply department, is particularly unfortunate in that it has no unit of measure. The measure it has made for itself is stock on hand, issues, and pay roll. This, if carried to its utmost conclusion, presents the spectacle of a storekeeper, whose first duty should be to meet the demands of the service, being without stock; whose second duty should be to husband his resources, endeavoring to increase his issues; whose third duty is to take proper care of the property in his charge, and make the most of the salvage by applying it to the company's needs, and the residue for the market (all of which necessarily means an increased pay roll), making every effort to have this work done by others, if it is done at all, and planning in every way to keep his pay roll down to the lowest possible point, regardless of what saving can be made for the company.

The supply department is probably the only department that has not so far developed a proper unit of measure. A railway is operated primarily for the purpose of moving trains, and the officers and men directly engaged in this work are measured by their ability to handle the business. In order to analyze the efficiency of the supply department we must first determine its real purposes, which I conceive to be: Service rendered by providing proper materials promptly; proper inspection and protection of all company property; conservation of its resources; cost of handling and accounting.

If this fairly represents the purpose of the supply department, then we must be measured first by the service given every day in the way of providing suitable materials economically, delivering them to the work when they are wanted, proper protection and control of the property under our charge to prevent deterioration and misuse, the assembling of it at proper locations for proper control so that it can be conserved, the installation of

system and order in the arrangement of the stocks and the men engaged in handling, so that the cost of handling may be as low as possible; the picking up and bringing in of the salvage, assembling it for market, making it over for further use, and arranging and classifying the scrap for the market.

Investment in materials will always be a prominent unit of measure, and rightly so, but it must be coupled with other things and be understood before it can be considered the unit of measure. There is no question but what the stocks of material as represented by the balance sheets of our different roads is too high. I should say as a general proposition that they are double what they should be. Much of this is due to causes over which the storekeeper has no control. Purchases continue to be made of large quantities of materials without the authority of the supply officer. With few exceptions, our railways have not so far seen fit to place all the materials on the road entirely in the hands of the supply officer, in fact, our general storekeepers today are, generally speaking, little more than custodians. Work is started and stopped without regard to material conditions. Everyone knows that labor can be procured in much less time than material, and that labor can be discontinued at a moment's notice, whereas the material has to be contracted for and must be accepted. This feature alone has probably had more to do with the accumulation of large and unnecessary stocks of material than any other one factor.

If all our railways were to adopt a standard classification of material, segregated sufficiently to clearly expose the principal items, and this classification was supported by a uniform accounting system, the issues would be accurately reflected. This would bring clearly before all officers interested the question of why a certain investment was necessary to protect a certain issue. For this reason the stock on hand and ratio of issues always have been and always will continue to be a unit of measure. Summing the entire matter up, the efficiency will be reflected in the ratio of purchases to the actual issues.

The title of the department and the officer in charge should be broad enough to cover all the operations of providing, caring for, distributing, and accounting for all materials unapplied, including the salvage. I believe "the supply department" and "supply agent" is more representative of the work and the officer in charge of it. The general supply agent to indicate the officer in general charge of all materials on the system; the supply agent indicating the man in charge of the supplies on division or district, and the storekeeper indicating the man in charge of certain stores or stocks. This may seem a small matter, but it is of utmost importance in establishing the scope and work of the department, and the responsibility of the officer in charge which is so necessary in order to place the organization in its proper place and broaden its usefulness.

Our storekeepers have been narrow in their conception of the real purposes of the organization, and are guilty of errors of judgment. They have conceived that their purpose was to obstruct and criticize, instead of the broader view that their real purpose should be to serve and assist, but the conditions under which they performed their duties are largely responsible for these errors. This is particularly true in the matter of concealed expense. There is little doubt but that the cost of handling, receiving, distributing and caring for materials by other departments was at least 50 per cent. greater than when done by a separate organization.

Having pointed out some of the faults of the supply department as now organized, it is in order to suggest the remedies. The trouble is with the foundation rather than the superstructure. The owners and executive officers of our roads must first recognize the need for this department, and the enormous economies which can be produced by a thorough system of control by a trained organization.

The first need is to place directly in charge of the supply department an officer thoroughly experienced in providing, handling and distributing of material. It is necessary to have a thoroughly practical man in charge of this work. In addition he must be

an executive, and have the power of organization and direction. He must have authority, as well as responsibility, the proper title and remuneration, and be co-ordinate with, and at least on a level with, other general officers. This will place in the hands of the supply department the power to regulate its stocks, meet the requirements and at once restore the confidence which is absolutely essential before any supply organization can reduce its operations to an economical basis.

The next step is to concentrate the stocks in as few places as possible with a proper delivery system direct to the work. With all the material on the railway under the direct charge of the supply officer, this can readily be brought about and sustained. Proper facilities and handling devices must be provided in order to properly store and economically handle material.

Efficiency can be developed from our own organizations. Valuable ideas are more apt to come to the men engaged in the work than they are to men who grab them out of the air. The efficiency idea is merely analyzing in detail each thread of the work and applying it in the simplest and most direct manner. By selecting from our own organizations men with the faculty for analyzing and construction, and giving them the support and opportunity to investigate and apply these thoughts, we get all the benefits of the men who are engaged day by day in this particular work, or, in other words, we get practical efficiency instead of theoretical efficiency.

Several of our large systems have already placed a vice-president in direct charge of their supply departments, and it is only a matter of a short time when this department will be thoroughly reorganized along the lines of greater efficiency and broader usefulness.

Discussion.—The only discussion on this paper was in commendation of it.

OIL AND WASTE.

Three papers were presented on this subject by W. O. Taylor, of the Galena Signal Oil Company; C. H. Tallman, of the New York Central & Hudson River, and E. C. Totten, of the same road. Mr. Taylor considered chiefly the illuminating and lubricating oils, giving valuable information as to the properties of these oils and the manner in which they should be stored. He spoke of absorbent towels which are used as a substitute for waste for general wiping purposes. By means of an "emulsion machine" oil can be extracted from these towels which can be used in the signal department for lubrication of switches.

From a report of a road using these towels it was learned that in one month 6,695 towels were washed at a cost of \$26.50 and returned to the shops; there was a saving of 4,000 pounds of colored waste. On this basis 24,000 pounds would be saved in six months at a cost of \$1,440. Subtracting from this the cost of the 6,695 towels (\$311.28) would give a saving of \$1,138.72.

Mr. Tallman spoke of the care of hard grease in the store-room and the saving that can be made by reclaiming old grease. He described a process by which it can be made over into serviceable stock.

HANDLING AND ACCOUNTING FOR MATERIAL AT CONTRACT SHOPS.

When equipment is to be repaired under a contract care should be taken to see that the contract is practical. The accounting, mechanical and supply departments should draw up the contract between them and it should be carefully studied by the accountants, inspectors and checkers assigned to the particular job. As the equipment is received at the shop it should be examined by the inspector with the assistance of the checker and his report should be made in duplicate, one for the contractor and one to be used in checking up new material as it is received. Definite prices should be agreed upon for any piecework done on the equipment and the price of the material, if any, furnished by the railway should also be fixed. It would be best to have all or none of the material purchased and furnished by the railway and still better for the contractor to furnish it all. When the railway company furnishes the material a complete store organization should

be maintained by it at the contractors' shops. In this case all material should be double checked and the inspectors should watch for wasted material and scrap.

OTHER BUSINESS.

The rest of the session was given over to the answering of queries sent in by members and by the closing exercises. In the answer to the question as to whether the saving would justify a \$50 or \$60 man for classifying a scrap pile of about 70 tons a month, it was brought out that if the man was limited to that work alone it would not be justified, but he would undoubtedly have time and opportunity for other work. A good man at the scrap pile is absolutely necessary for the moral effect it will have on the shops sending in scrap. If the shops receive back useable material, which they send in as scrap, they will be more careful in reclaiming material. On some roads the higher officers require reports showing the amount of useable scrap returned to the different departments.

Concerning assembled shipments of material, the consensus of opinion seemed to be that for requisition for five-car lots or under they should be shipped assembled, although no iron-clad rules could be laid down. Assembled shipments allow the work to be properly begun, limit the misapplication of material, limit the liability of stealing and save in the handling of the material.

G. G. Allen, Chicago, Milwaukee & St. Paul, stated in connection with the subject of surplus material that the general storekeeper should be constantly in touch with what is going on on the road, so as to plan for any new material that may be required and also to pick up material not needed.

The memorial committee passed resolutions on the deaths of J. R. Lawler, Grand Trunk, and A. I. Miller, Missouri, Kansas & Texas.

New officers were elected as follows: J. R. Mulroy, St. Louis & San Francisco, president; J. W. Gerber, Southern Railway, first vice-president; G. G. Allen, Chicago, Milwaukee & St. Paul, second vice-president; J. P. Murphy, Lake Shore & Michigan Southern, secretary and treasurer. There were 210 members present at the convention.

The Rinnai Railway, Formosa, is 18 miles long, is tortuous, and has a grade of six per cent. This railway is called the Mount Arisan line, Mount Ari lending its name to the railway as well as to the giant forests that are the objective point of the undertaking. The exploitation of the valuable forest of Mount Ari is no new enterprise. Years ago a private company surveyed a line and commenced constructing a road. But the undertaking was abandoned after futile attempts to interest private capital. Then the government was approached to take over the property of the private concern and carry forward the work. After considerable discussion in the imperial diet an appropriation of \$2,450,000 was made in 1910 for the Mount Ari forest exploitation. Practically the operation and property of the private company were of no value, and the work was started anew. The most capable engineers of the government are directing the construction, and difficult obstacles are being rapidly overcome. Aside from the extension of the frontier lines, no undertaking by the Formosan government is more important to the island's development than the Mount Ari enterprise. American manufacturers should be interested in this Mount Ari forest exploitation, because American locomotives and American machinery are almost exclusively employed. At present two American-built locomotives (the Shay high-g geared type) are operating on the mountain section, the gage being 2 ft. 6 in. Two new locomotives of the same type have been ordered from the Lima Locomotive & Machine Company. The rails for this railway were also bought in the United States. The entire railway will be finished probably by January, 1913, when logs will be delivered from the forests of Mount Ari to the American-built sawmill at Kagi.

MANUAL BLOCK SYSTEM ON SINGLE TRACK.*

An instructive illustration of the simplicity of the problems involved in the introduction of the manual block system on a single track line is afforded by the action of the Chesapeake & Ohio, west of Cincinnati.

The Chesapeake & Ohio acquired the Chesapeake & Ohio of Indiana, formerly the Chicago, Cincinnati & Louisville, in December, 1910. This is a line of light traffic, running three passenger and an average of five freight trains each way daily over the eastern part of the line, and three passenger and three freight over the western part. No space-interval rule had been thought of until the Chesapeake & Ohio took charge. Indeed, this was a comparatively new road, built too late to be able as an independent line to secure any considerable amount of through business, and the receipts were so low as to demand the severest restriction of expenses. But the officers of the Chesapeake & Ohio had no sooner examined the condition of their newly acquired property than they decided to adopt the block system, and they did so with no appreciable addition to the plant and with an increase in the force of telegraphers of only 26 per cent. (The 39 telegraph offices were manned by 60 operators; this number was increased to 76); and thus the only addition to the pay roll is about \$11,000 yearly.

At the east end of the line trains are run for 6 miles over the Cincinnati, Hamilton & Dayton; and at the west end for a considerable distance over the tracks of other companies, so that the length of line within the jurisdiction of one dispatcher is 256 miles. From the eastern terminus to Peru, 155 miles, the average number of freight trains each way daily is five. West of Peru, 101 miles, the average number of freights each way daily is three.

Following is a list of the stations, beginning at the easterly end:

CHESAPEAKE & OHIO IN INDIANA.		
Block stations.	Distance from preceding station.	Office open daily.
	Miles.	
Summit	0.0	24 hours.
Miami	9.8	7:15 a. m. to 7:15 p. m.
Fernald	4.6	24 hours (14.4).
Shandon	3.3	7 a. m. to 7 p. m.
Okeana	3.5	7 a. m. to 7 p. m.
Peoria	7.1	24 hours (13.9).
Bath	5.9	7 a. m. to 7 p. m.
Cottage Grove	6.0	24 hours (11.9).
Kitchell	5.9	8 a. m. to 8 p. m.
Boston	4.0	6:30 a. m. to 2:30 a. m. (18 hours).
South Richmond	7.0	24 hours (16.9).
Richmond	1.1	6:30 a. m. to 2:30 a. m. (18 hours).
Williamsburg	10.9	24 hours (12.0).
Economy	5.7	8 a. m. to 2 a. m. (16 hours).
Losantville	6.9	24 hours (12.6).
Blountsville	4.2	8 a. m. to 8 p. m.
Medford	6.0	24 hours (10.2).
Muncie	6.4	24 hours.
Gaston	10.5	6:30 a. m. to 6:30 p. m.
Fowlerton	7.4	24 hours (17.9).
Jonesboro	6.3	6:30 a. m. to 6:30 p. m.
Marion	5.1	24 hours (11.4).
Sweetser	5.6	6:15 a. m. to 6:15 p. m.
Converse	5.7	24 hours (11.3).
Amboy	3.1	6 a. m. to 6 p. m.
Santa Fe	5.9	8 a. m. to 8 p. m.
Peru	7.7	24 hours (16.7).
Shops	0.9	24 hours.
Hoovers	8.7	7 a. m. to 7 p. m.
Twelve Mile	4.5	7 a. m. to 7 p. m.
Fulton	5.9	7 a. m. to 7 p. m.
Kewanna	9.4	24 hours (28.5).
Beardstown	12.9	7 a. m. to 7 p. m.
North Judson	10.6	24 hours (23.5).
La Crosse	9.2	6:45 a. m. to 6:45 p. m.
Malden	8.4	7 a. m. to 7 p. m.
Beatrice	9.1	6 p. m. to 6 a. m. (night 26.7).
Merrillville	8.7	7 a. m. to 7 p. m. (day 17.8).
Griffith	5.4	24 hours.

The list shows all block stations from Summit, 6 miles from the passenger terminus at Cincinnati, westward to Griffith, Ind., which is 29 miles short of the Chicago terminus. It will be seen that in this list there are four block sections, each 10 miles or more in length, which are never

*From the annual report of the Block Signal and Train Control Board of the Interstate Commission.

shortened. Twenty-two of the 39 offices are open less than 24 hours a day, as shown. Most of these are open 12 hours during the day. One only (that at Beatrice, Ind.) is open at night, but not during the day. The lengths of the block sections at night, when the day offices are closed, are shown in parenthesis, as, for example, at night the first block section, that from Summit to Fernald is 14.4 miles long. The longest block section is that maintained at night between the Peru shops and Kewanna, 28.5 miles.

In one average day (November 7, 1911) the number of permissive indications given was as shown below. Peru is about midway between the termini of the road, and the dispatcher's office is at the Peru shops. The runs of the local freight trains are from Summit to Richmond, from South Richmond to Peru, and from the Peru shops to Griffith.

EASTBOUND TRAINS.

Local freight No. 86, Griffith to Peru. Clear blocks to Beardstown, 46 miles; permissive, on account of a work train, from Beardstown to Kewanna, 13 miles; thence clear signals to Peru, 28 miles.

Eastbound through freight No. 92. Clear at every block except three permissive signals east of Peoria (Peoria, Okeana, and Fernald).

Second No. 92, starting at Peru. Clear blocks 56 miles; permissive one block 6 miles on account of work train, and thence clear to Peoria; permissive Peoria to Okeana, 7 miles; clear thence to Summit.

No. 84, local freight, Peru to South Richmond. Clear blocks Peru to Gaston, 46 miles; permissive through Muncie yard; clear Muncie to Richmond, 40 miles.

Local freight No. 82, South Richmond to Summit. Clear blocks South Richmond to Fernald, 33 miles; permissive thence to Miami, 5 miles; clear thence to Summit.

Extra freight No. 1218, starting from Peru. Clear blocks to Jonesboro, 33 miles; one block permissive to Fowlerston, 6 miles, because of local freight ahead; clear from Fowlerston to Summit, 122 miles.

Extra freight No. 1207, starting from Peru. Clear blocks from Peru to Miami, 145 miles, permissive Miami to Summit, 10 miles. (This is nearly all up grade.)

WESTBOUND TRAINS.

Freight No. 71, Summit to Peru. Clear blocks all the way except permissive on account of yard engines at Richmond, Muncie, and Peru.

Local freight No. 81, Summit to Richmond. Clear blocks from Summit to Boston, 50 miles; permissive signals because of yard engines at Boston and South Richmond.

Freight No. 95, Summit to Griffith. Permissive block to Miami, 10 miles; clear blocks Miami to Williamsburg, 61 miles; permissive block thence to Economy, 6 miles; clear blocks thence to Griffith, 174 miles.

Freight train No. 73, Summit to Peru. Clear blocks all the way except for yard engines at Peru.

Through freight No. 75, Summit to Peru. Clear blocks all the way, the train being next behind a passenger train.

No. 83, local freight, South Richmond to Peru. Clear blocks Richmond to Medford, 33 miles; permissive signals for yard engine at Muncie; clear signals Muncie to Santa Fe, 50 miles; permissive signals for yard engines at Peru.

Local freight No. 85, Peru to Griffith. Clear signals all the way.

If the adoption of the block system is to be deferred because of light traffic, this would seem to be a case where such action would be justified; but even with this light traffic the chance—on 256 miles of road, all single track, operating a million to a million and a half train-miles a year—of having butting collisions is not to be ignored; and a single butting collision would not need to be very bad to cost \$11,000, or a sum larger than the annual addition to the pay roll which was necessitated by the introduction of the block system.

And in resolving to reduce that chance, the officers of the Chesapeake & Ohio seem to have decided, almost instinctively, on the block system as the proper means, in the same way that they would adopt the air brake for stopping or controlling heavy trains or the best roadbed, ballast, and rails to guard against derailments. The block system has been in use on the Chesapeake & Ohio in Virginia, including a large mileage of single track, for over 20 years, and for several years on substantially all of the company's lines; and the simple, logical conclusion that the space interval is the only rational method of safeguarding trains against collisions has come to be on this road not a mere doctrine to be discussed in lectures, but a "habit of thought," to be put into practice without question.

THE BEST AND MOST ECONOMICAL METHODS OF HANDLING A STATION.*

BY E. H. CAMPBELL,

Agent, Chicago Great Western, Kansas City, Mo.

The secret of successfully handling a freight station is a matter of system, close attention to the details and the proper keeping of records. Where this idea is carried out and regular channels are arranged for each branch of the work to pass through, they act as guides to the organization in properly handling the business; in fact, it takes care of itself.

All efforts in the line of economy or the saving of expense do not necessarily show results at forwarding stations, but do at the receiving station if started out right. I will refer occasionally to instances in this respect. I will explain my ideas of the handling of a few of the various details.

RECEIVED BUSINESS.

It should be arranged as far as practicable at large stations to secure waybills from billing stations by mail in advance of the cars. These bills should be revised and expensed as soon as received and turned over to the freight house foreman so that freight can be checked and unloaded promptly (from the freight bills) and thereby be ready for delivery as soon as unloaded.

The expensing should never be deferred until freight is unloaded, for several reasons.

First. The freight house force is not able to effect a prompt delivery and goods remain too long in the house, causing congestion and extra handling, which are expensive as well as liable to cause complaint from shippers and result, in many instances, in the loss of future business.

Second. Where the expensing is not done in advance of unloading, it is necessary to check out cars from waybills or blind talley. Using the waybills to check from delays expensing, "freight received" record and abstract work; blind talley checking causes additional and unnecessary expense in rechecking against original waybills.

Third. Where expensing is done in advance of the arrival of cars and is used in checking out freight from cars, all necessary marks shown on packages not appearing on the waybills should be noted on the freight bill by the check clerk.

It is surprising the number of shipments that are prevented from being delayed by information taken from the marks on packages and inserted on freight bills by check clerks. For instance, about 40 per cent. of the shipments originating east of Chicago do not carry the street address of consignee on billing, but in most cases it is shown on the packages. Check clerks insert this information on freight bills, and it is used in sending out postal card notices. Without street addresses in large cities postal cards do not reach consignees and the result is that freight is not called for promptly.

Checking out freight on freight bills also tends to verify their correctness and in case of exception the original waybill is always referred to. Further, the expense bill is a station record and can be referred to at any time, whereas the original waybills are sent to the accounting office daily, which leaves no record of actual checking on file at the station.

Each shipment should be checked out to the drayman from the freight bill. In case of damage or shortage, proper notations should be made on the bills. Where packages have the appearance of having been tampered with, the delivery clerk should check the contents. The signing of receipts at the cashier's window should not be permitted, as they will not hold in cases of claims. The proper place and time is at the freight house door when freight is delivered to the drayman.

Receipts for freight should be carefully and properly filed for future reference, as they are in many instances the company's only defense in case of claims. They should not be tied up with

*Paper read at a general meeting of the Chicago Great Western Station Agents' Association, Oelwein, Iowa, January 27.

string or rubber bands, but securely bound. Some stations sort them out in Pro. number order, others file them alphabetically under the initial of consignee. At Kansas City we make the receipts also answer the purpose of a cash memorandum.

There is no question as to our having to account for the money; therefore, when we collect freight charges we are forced to dig up the receipt before entering the item in our cash book. While the freight bill is pending settlement, the receipt is retained in the freight bill case in the cashier's office. This has proved to be the safest plan for taking care of receipts that I have ever known, and I believe I have tried them all.

As soon as a train arrives, the yard clerk should take such information from the waybills as is necessary for proper carding and switching of the cars and promptly turn the waybills over to the disposition clerk. The latter should promptly notify each consignee by telephone and then confirm the notice in writing, retaining a copy as a station record. In each case where he receives a move order on the car he should note the switching destination on the waybill and give the necessary order to the yardmaster.

As soon as all consignees have been notified, the order clerk should take a record in the demurrage book, turn over to the switching clerk waybills for all cars to be switched, retaining in the hold file waybills covering the cars on which no move order has been given.

No waybill should be taken into account or removed from the disposition desk until cars have been ordered switched to their final delivery track or connecting line. The switching clerk, on receipt of waybills from the disposition desk, should immediately compile his switching statements and then pass the bills to the revising clerk. The revising clerk should promptly revise and take into account all waybills except those covering grain or commodities subject to board of trade or Western Railway Weighing Association weights. The revising clerk should follow up the latter cars and secure weight certificates promptly and then take the bills into account. Bills for through shipments should be given preference and hurried to the connecting line. Failure to do this results in delays to cars.

FORWARDED BUSINESS, L. C. L.

When goods are offered for shipment, there are many things to consider besides the mere checking of articles from the wagon and the signing of the dray ticket. Receiving clerks should be familiar with rules and classifications. Never accept a shipment billed "charges collect" that is apparently not worth the freight charges. Do not accept a shipment of household goods billed "collect" if the classification specifies that it should be prepaid. Do not accept a shipment of cement sacks not properly bound, not marked on linen tags, and not prepaid. Do not accept a shipment billed to any point without first ascertaining whether or not it is an open station. If it is not open, call the attention of the shippers to the fact and have them prepay. There are enough household goods, cement sacks and other shipments held in Kansas City by all lines, for requirements as referred to above, to fill several cars. Connecting lines will not accept shipments from their connections under such conditions.

By the term, "do not accept," I do not mean that receiving clerks should turn the drayman back with the goods, but that they should get into communication with the shipper over the telephone, or refer the case to the office to straighten out.

Receiving clerks should carefully check each article as it comes off the wagon and not simply count the number of packages, and should be sure that every package is marked in a plain and durable manner. It should be borne in mind that when packages go astray in transit without marks they seldom reach their proper destination. Primarily, the shipper is at fault, but as he holds the agent's receipt, the company pays for the goods. In loading out freight, check the truckers up close to see that they take freight into the proper cars and thereby reduce the chance of freight going astray. A good stowman can prevent many

shipments going wrong by keeping close watch on the freight brought into the cars by truckers.

CARLOAD FREIGHT FORWARDED.

In furnishing empties for loading, never use a system car if you have a foreign empty for home in the direction of destination of your shipment. It is expensive to allow a foreign empty to remain on hand and more expensive to haul it home empty.

Keep a close check on your loads awaiting billing, and call on shippers or connecting lines for billing. Keep a close check on billing held for cars from connecting line industries and trace the cars if they do not show up promptly. As a rule the shippers give the revenue line all credit for poor service, seldom making any allowance for poor switching service.

Do not, at terminals, as some do, keep a book record of trains forwarded. It is unnecessary and a waste of time and often delays the departure of a train. Take for your record a carbon of the wheel report you make for the conductor. In billing carloads, read carefully the classification and tariffs covering the commodity. If the size of the car ordered or the one furnished at the company's convenience governs the rate, show it on the billing. At Kansas City we have no end of trouble trying to collect bills where the billing to us fails to show such information. One day last month alone we had so many cases of agents billing in grain with no notation as to size of empty ordered or as to loading with reference to visible capacity of car, that we had to use the duplicating machine to get out enough letters asking for the information. By referring to grain tariffs, agents will find a clause to the effect that the minimum shall be 10 per cent. less than the marked capacity of the car except when loaded to full visible capacity.

At large terminals, cars are switched to mills and elevators on other lines, and receiving agents have no way of knowing how they are loaded; therefore, collection of charges is delayed until information is furnished from the originating station.

COLLECTION OF FREIGHT CHARGES.

If there is any one feature of the details of a station on which more money can be saved than on any other, it is by the prompt collection of freight charges. To substantiate this, a few years ago I took charge of a station where the daily uncollected bills averaged about \$30,000. In a short time we brought the daily average down to \$10,000. When I took charge at Kansas City the uncollected bills averaged about \$60,000 daily. In a short time we brought this average down to less than \$25,000. Understand now that this is a daily average, not the bills uncollected at the end of the month. This means that these two stations put in the company's treasury every day \$55,000 that was formerly left in the hands of shippers. In other words, some shippers had been doing business on the railway company's capital.

I do not know what money is worth to this company in the way of interest, but say it is worth 4 per cent. That means we have earned \$2,200 a year at these two stations. Possibly the same conditions that I found prevail at other stations. I would suggest that each agent give this matter his attention. Draw off your daily uncollected bills for a month, divide the total by the number of working days and then see how much a day you can reduce the average.

The reduction in uncollected bills has never to my knowledge cost the company a cent in loss of business. I have taken but one man off of the credit list since I have been in Kansas City. Never but once has complaint been made; then without reason, and it did not affect us. It is seldom necessary to place a merchant on a cash basis and it is not difficult to secure money promptly without trouble or feeling.

My experience is that the principal cause of large uncollected accounts is improper figures on freight bills caused by wrong weights, classification or rates. If you present a bill for \$100 to a reliable patron and he contends for some reason that he has been overcharged several dollars, if the contention seems reasonable, do not allow the entire bill to run until you investigate

through connecting lines, point of origin or other channels, but collect the \$97 or whatever amount he admits he owes, and get the bulk of the money working for your company. If the consignee is wrong he will pay the balance due when the investigation is finished and the matter is properly explained to him.

Never allow a collector, or others not fully posted on rates, etc., to argue with a shipper over a bill. Make it a point to present your bills promptly. It leads patrons to believe that if your line is prompt in this respect you despatch their goods in the same manner.

Further, many patrons buy goods with a discount allowance if the bill is settled for in a specified time, and a receipted freight bill is considered as part payment. Therefore, we should not cause patrons to lose discounts by our failure to present bills promptly.

FILING TARIFFS.

Large uncollected lists and delayed payments are due to a great extent to wrong rates caused by failure to file tariffs. The work of properly and promptly filing tariffs is done more laxly than any other station detail. Many agents do not understand how to file tariffs, and often where they do no one else can locate them. Some roads have traveling tariff men to file tariffs, but it is an unnecessary expense. With proper system, the average office boy can file tariffs properly. For instance: the standard tariff case at stations contains 60 pigeonholes. Sort out your tariffs in the various pigeonholes and number the latter from one to 60. Then in one day's time you can index them all, using a small book with pages numbered from one to 100, using the last two figures of the tariff for page number and opposite this number show pigeonhole number. As amendments are received, refer to the index and insert the box number with pencil on each, then you are ready to place each amendment in the proper box. When one tariff is superseded by another, cross reference it in the index book and write up under the new number using the original box number.

When you have occasion to look for a tariff from foreign territory or on a special commodity, refer to the commodity index No. 25-A, issued by the general freight office, which gives you the number. It is then an easy matter to refer to the index and get the box number.

This work could be made much more simple for agents in filing, if the general freight department would maintain four standard files in its office, one for each division, with tariffs properly arranged in each pigeonhole as fast as issued, and in issuing new ones or amendments, stamp the pigeonhole number or box number on each. Unless some system of this kind is inaugurated, I am afraid railways will never be able to keep proper files at all stations.

STATION RECORDS AND THEIR PRESERVATION.

There is scarcely any detail connected with a station that saves more expense not only at the station but in the freight claim agent's office as well, as the proper keeping and preserving of records.

Records are not made simply to give people employment, but are for the purpose of handling claims, tracers, accounts and other matters that follow the shipments from their origin until the accounts of shippers and carriers are finally closed; and unless they are systematically filed, accounts are held open, claims delayed, the company loses money, and shippers become dissatisfied, which often results in loss of business.

I have spent from three or four days to two weeks at all the large stations on this line, and have put in time in proportion at the smaller ones. Several stations (not including Chicago) at times had on hand from 400 to 700 claims and other correspondence in proportion. These conditions were not entirely due to lack of help, but principally to lack of system.

To illustrate: A claim clerk takes a bunch of 30 claims out of the stack of 500, picks up the top one, puts in a few minutes reading it and discovers that the claim agent desires a copy of a receipt for the goods. Knowing that the station receipts have not

been filed for months, he figures it is about a two hours' job to find what is desired, therefore he places the claim on the bottom of the stack. He then picks up the next one and finds a copy of forwarded billing is required. The waybill books are not properly numbered, but he looks over a bunch of 10 or 12, finally finds the right one, and then makes out the copy, but has consumed considerably more time than necessary. Picking up the next paper he finds the auditor of freight receipts tracing for the account of a June 10 waybill. He puts in half an hour running through the entire freight received record for that month, but does not find it and again the papers go to the bottom of the stack. Had the station been keeping an index record of received waybills, it would have taken about 15 seconds to discover that the June waybill desired was taken into account on July 7 and the correspondence could have been disposed of.

Claims and other correspondence have to be answered and if put off today on account of poor records, lob up again, so why not have all records in such shape that it is an easy matter to find everything?

In the last few years most railways have adopted loose-leaf records at stations. At large stations this is a great improvement over the books formerly used, for the reason that one clerk writing up records does not monopolize more than one day's business at a time. At Kansas City we use temporary binders which accommodate about 1,000 sheets each and all loose records are placed in these binders daily and when filled are transferred to the permanent binders. Before we put in these binders at Kansas City (about 18 months ago) we had a great deal of difficulty trying to keep sheets in order until ready for the permanent file, and I have noticed the same trouble at other stations.

I have also found that the numbering of books or binders in numerical order and uniformity in marking them saves time as compared with the dating of them only, as they are more easily found and seldom are they put back in the wrong place after being used.

I believe that a proper filing of every record from the time that it is originally made out enables large stations to do the work with at least one man less than where the filing is lax; but avoid two or more records where one will answer all purposes.

O. S. & D. FREIGHT.

Just a few words in regard to "over" and "short" freight, of which Kansas City seems to receive its share. Keep an alphabetical index record of every over shipment, keep another of every short shipment. If consigned or marked to your city proper, index under the name of the consignee; if to a point on a connecting line, index under destination.

When a shipment checks short today destined, for instance, to Lake Charles, La., index it in the short book under letter "L" and send the bill to the connecting line for "revenue only." Three months later a shipment comes in "over" marked Lake Charles, La. Look through your short index and you will find where it belongs, write it up in the over index book and cross reference both entries and then send the shipment to destination on astray bill, referring thereon to the revenue bill of three months previous.

A claim is usually going the rounds by this time. When it reaches you show delivery since the claim started, and the result is that the claim is then withdrawn. Match your city overs and shorts through your index book in the same way. Many a claim for shortage is paid in cases of this kind through lack of having a ready system of checking.

A blind check of every package in the freight house should be taken once a week if possible. The best plan is to take this check on days when the house is most clear of freight, and then compare your bills against this check. This often results in straightening out of overs or shorts and also assists in the delivery of freight. An agent should personally examine this check and make sure that every effort possible is being made to dispose of freight on hand. The check should include freight held for prepay or other similar causes.

From my experience I have found that most agents thoroughly

understand their duties, but often fail to succeed by becoming discouraged when things break badly. If you make up your mind to conquer, there is no such word as fail. Do not get discouraged when work runs behind or when you are sent to straighten out a station that is in a rut. Get into the work personally, put in all the time you can spare at one branch of it until you get it in line, then take up another branch, and so on. It will only be a short time until you are even with the entire game.

Never lay the conditions to the fact that you are unable to obtain good or experienced men. Experienced men are all right when you can get them, but I have secured very good results from having bright inexperienced young men and educating them to do the work as we desire it.

THE DROP TRUCK SYSTEM OF HANDLING FREIGHT.

The drop truck system has some advantages over the old method of handling freight, but its entire success depends largely on conditions and the class of business handled.

The system is applied at some stations on both in and outbound freight, while at others, it is confined to outbound business only. Some lines throw all their laborers into one large chain gang, while other roads claim better results by dividing the men up in separate gangs.

Where all laborers are in one gang they work under the direction of the foreman and one assistant, who are stationed at most suitable house or dock points to direct the men. On the unloading one check clerk and truck loader are placed in each car and as fast as they load a truck it is pulled outside the door on to the platform and an empty truck is drawn into the car. The laborers, in trucking, drop empties opposite such cars and pull the loads into the house.

Most freight houses have from two to four tracks several hundred feet long paralleling each other, all of which are filled with cars for unloading and in many cases truckers can only reach cars from cross-overs around the ends of tracks or through occasional openings through the cars. With the men all in one gang they drop their empty and pick up the first favorable load they come to. The result is that freight nearest the ends of the tracks moves promptly, while freight further down from both ends is neglected. Every little while work is delayed in giving relief to the neglected truck loads.

Check clerks and truck loaders have no jurisdiction over the truckers, and when they find articles in a car too heavy for two men to handle there is a delay in getting sufficient help. Truckers also shun the heavy loads until specifically ordered by foreman to pick them up.

There was so much trouble of this kind at Kansas City that some of the roads have given up the one gang part of the system of unloading and instead are using drop trucks in separate small gangs under the direct charge of check clerks, while other lines are using the old system of gangs. Both of the latter plans are giving better results than the chain gang or "running wild" system. Check clerks are held responsible for their men, and it is impossible for any of the men to drop out without being discovered. Where all the laborers are in one gang, it happens frequently that men will answer the roll call, work an hour or so and then hide out for a couple of hours unnoticed. In checking up at one of the largest houses in Kansas City, 17 men were found to be missing at one time, and every one of them was finally located away from the company's property. In my opinion the chain gang is not a success, nor is it economical.

On forwarded business there is considerable merit in the drop truck system, particularly if the business is heavy and if it is delivered by shippers, to any great extent, early in the day. By furnishing each receiving clerk with one truck loader, freight can be checked off the wagons onto trucks and loaded in station or block number order. These trucks are pulled a short distance away from the door or from the edge of the wagon dock as fast as loaded.

While this work is being done all other laborers are used in the unloading of received freight. As soon as there is an accumulation of loaded trucks or the supply of empties begins to run low on the dock, eight or ten men are taken from the unloading work and pull all the outbound loads out to the car doors where the stowman takes charge of them. As they return they bring back all empty trucks. As soon as the dock is clear of loads, they return to their unloading. As a rule, this performance is repeated once or twice. Later in the day or in the afternoon when shipping becomes heavier the entire force is put on the outbound work.

Where the entire labor force is thrown into one gang considerable trouble is experienced by laborers taking the wrong class of goods to cars first. For instance, laborers will take trucks of package freight and leave long pipe, etc., simply because the former is easier to handle. Pipe, pumps and similar long freight should go into cars first and failure to do this causes the shifting of freight in the car to make room, which, of course, results in delays and expense. When separate gangs are used, check clerks order such freight moved promptly.

The works which will unite the Central Railway of Brazil with Belem, capital of the state of Para, on the San Francisco river, are progressing rapidly. This railway, together with the Sao Paulo to Cuyabas, in the state of Matto Grosso, and the Goyaz railway will connect the federal capital with the states of the Amazon region. A bridge is being built over the San Francisco river.

In spite of great projects and many promising features, the railway situation in China does not presage the immediate development of the country along modern lines. Much has been accomplished, but, in spite of the fact that the interest of the entire world has been centered to an unusual degree upon the building of railways in China, that both Chinese and foreign statesmen well understood that the first requirement in the development of the country's resources and its advancement is railway construction, and that railway systems aggregating more than 13,400 miles have been planned, of which 5,000 miles have been surveyed in a more or less definite and final manner, the construction during 1910 of railways of all classes, including extensions of existing lines, further work on lines already commenced and operated to a certain degree, and entirely new lines, did not exceed 500 miles, and at least part of this construction must be credited to the previous year. Of this construction, about 275 miles is accounted for in the work on the Tientsin-Pukow system, of German ownership. The Ichang-Wanhsien line and other Yangtze valley lines account for about 40 miles; the extension of the Canton-Hankow system north from Canton, including branch lines to various points, and the extension of the same system south near Changsha, including lines to mines, 80 miles; the Canton-Kowloon Railway, the Sunning Railway extension, and work on the Amoy-Changchow and other coast lines, 75 miles; the extension of the French railway from the south to Yunnan, 60 miles; and apparently about 60 miles of new road were constructed in the Manchuria country during the year. Scarcely any of this is actually new work, most of it being the continuation of work commenced in other years. The fact is that while plans for new railways in China are common actual development is proceeding slowly. New plans are carried out with difficulty, modified, or abandoned. For this there are several causes, most of which appear reducible to one or two circumstances—either the people are unwilling that other nations should furnish the money to build roads, and have not the money themselves, or, if willing to borrow from abroad for such work, other considerations have so far prevented the placing of the necessary loans under admissible conditions and circumstances.—George E. Anderson, American Consul General at Hong Kong.

General News Section.

The first regular passenger train to cross the new Galveston causeway was a Santa Fe train which made the trip on May 17.

The car shops of the American Refrigerator Transit Company at St. Louis were considerably damaged by fire on the night of May 14.

The Lake Shore & Michigan Southern has been fined \$1,000 in the United States district court at Indianapolis for violation of the hours-of-service law.

According to a press despatch from Italy, telephone conversation by means of wireless apparatus was, on May 17, transmitted a distance of over 160 miles, from Monte Marie to Magdalena Island.

At the annual meeting of the National Association of Manufacturers, held in New York City this week, ways of preventing accidents in factories and other places were illustrated by an exhibition of motion pictures.

The city council committee on steam railways at Cleveland has invited steam railway officers to attend a hearing on June 5 to express views on a general policy for electrifying the steam railway lines within the city limits.

The Brotherhood of Locomotive Engineers, in biennial session at Harrisburg, Pa., has voted that hereafter the convention shall be held only once in three years. Warren S. Stone has been re-elected grand chief, for a term of six years, by a large majority.

The War Department has announced that a hearing will be held in Chicago in June on the complaints against the fixed bridge built by the Chicago, Burlington & Quincy about 20 years ago across the Illinois river in LaSalle county. The boat owners want a drawbridge.

It is reported from Los Angeles that federal officers have announced their intention of attacking the holdings of the Southern Pacific in the oil sections of California on charges of conspiracy to obtain patents on oil-bearing land as agricultural property.

Mayor Harrison, of Chicago, has vetoed an order of the city council directing the corporation counsel to oppose in court the contract between the Illinois Central and the Board of South Park Commissioners by which the railway gives up its riparian rights to the shore of Lake Michigan in exchange for a wider right of way.

The House judiciary committee at Washington has continued to take testimony in connection with the charges against Judge Archbald of the commerce court during the past week. None of the evidence given has been sufficiently clear and comprehensive to afford material information as to whether or not the charges are well founded.

The lawyer, claim agent, and two detectives, who were indicted at Toronto recently for contempt of court in framing a fictitious damage suit before the court for the purpose of showing how the Toronto Street Railway had been defrauded by suits for damages by persons who had not been injured, have been let off, on making to the Justice a suitable apology.

The Massachusetts legislature has rejected the bill recommended by Governor Foss to provide for the merger of the Boston & Maine with the New Haven, and for the electrification and other improvements at Boston, the Senate rejecting it by a vote of 15 to 20. Governor Foss has told his friends that he shall call an extra session of the legislature in July for the purpose of passing his bill.

The National Civic Federation has sent R. H. Whitten to England to make a four months' study of the governmental regulation of public service corporations in that country. Mr. Whitten is statistician of the New York Public Service Commission, First district. The National Civic Federation will soon issue a part of its compilation of the public service laws of the United States, England and Canada.

The Panama Canal bill was discussed at great length in the House of Representatives at Washington, on Tuesday of this

week, and the proposals to allow American ships to pass through the canal free of toll and to forbid the use of the canal entirely to ships owned by railway companies, were favored by large majorities; but this action was in committee of the whole, and whether it will be confirmed on final vote remains to be seen.

A committee of officers of the Harriman Lines is making a study of the safety committees which have been organized on various railways with the idea possibly of recommending the establishment of similar organizations on the Harriman Lines. The committee is composed of W. R. Scott, assistant general manager, Southern Pacific; M. J. Buckley, assistant general manager, Oregon-Washington Railroad and Navigation Company, and Charles Ware, assistant general manager, Union Pacific.

President Taft, acting on information gathered by the Department of State, has had letters sent to the prominent railways of the country in the interest of the 80 locomotive engineers and 83 conductors who have recently left the service of the Mexican National Railways, and who are now in the United States, out of work. The State Department kept informed of the differences in Mexico which resulted in the Americans leaving their jobs, and our ambassador endeavored to effect a reconciliation; but was unsuccessful.

After many postponements the trial of the four former Illinois Central officers indicted on charges of defrauding the railway in the notorious "car repair graft" cases has been set for June 3 before Judge George Kersten of the Chicago criminal court. The defendants are: F. B. Harriman, formerly general manager of the Illinois Central; J. M. Taylor, formerly general storekeeper; C. L. Ewing, formerly general superintendent, and J. E. Buker, formerly superintendent of the car department. At a hearing on May 14 the court insisted that the case go to trial on the date set without further delays.

It is announced that the Southern Pacific is to follow the plan of giving publicity to accidents which has been in effect on the Union Pacific and other lines of the Harriman system for several years. Following an accident that is not of minor consequence the ranking officer of the division will convene a board composed of two disinterested persons not connected with the railway, and the division officers representing the operating, mechanical and engineering departments. The board will conduct a thorough investigation to fix the responsibility for the accident, and its findings will be given to the newspapers.

The anthracite coal miners, in convention, at Wilkesbarre, last week adopted the report of their committee recommending an agreement with the operators, on the plan heretofore published. This action, which evidences a business-like disposition among the rank and file to sustain their leaders, averts the threatened strike, and work will be largely resumed this week. The plan, as presented by the operators, provides for fixed rates of wages, and the sliding scale, which has been in force during the past ten years, is abolished; but it is said that the new rates are enough higher than the old, so that the miners will be decidedly better off than with the sliding scale.

The New York State Public Service Commission and the New York City Board of Estimate are rapidly preparing the details of the plans and arrangements under which the new subway and elevated lines, recently agreed upon, are to be built. When all of the lines now proposed shall have been finished, the rapid transit railways in the city will aggregate 687 miles of track (not line). The elevated and the underground lines to be worked by the Interborough Rapid Transit Company will aggregate 377 miles of track, and those to be operated by the Brooklyn Rapid Transit Company, 310 miles. This does not include the ordinary trolley surface roads, in the streets, operated by the Brooklyn Rapid Transit Company.

The Mississippi railway commission has shown a spirit of cooperation with the railways operating in the state by announcing its intention of taking into consideration the large amount of damage inflicted on several of the roads by the recent floods in the Mississippi river, before ordering them to make expensive

improvements. While the announcement was made informally to railway officers, they have been given to understand that the commission will for a time at least leave the railways that have been most affected by the floods free to use their own discretion in the expenditure of available funds for the purpose of restoring service as quickly as possible to the communities most in need of it. It was recently reported in the *Railway Age Gazette* that on April 29 there were 351 miles of branch lines of the Yazoo & Mississippi Valley in Mississippi under water, and many towns have suffered severely by the lack of communication. Instead of being ordered to make improvements to accommodate the towns that are continually demanding new stations, more trains and more stops by existing trains, the roads will be allowed for a time to devote their energies to repairing the devastation caused by the floods.

The City Club of Chicago has announced a series of exhibitions and discussions on the present conditions and possibilities of improvement of Chicago's transportation problem to be held from May 23 to June 8. The exhibition will deal with transportation by boat, on foot, on wheels, through pipes and over wires. The program includes an illustrated lecture by Samuel Insull, president of the Commonwealth Edison Company, on "Supplying the Energy Requirements of the Community," on May 23; an illustrated lecture by Professor J. Paul Goode of the University of Chicago on "Chicago, the Transportation Focus," on the evening of May 24; an address by F. A. Delano, president of the Wabash, on "The Transportation Proposals of the Commercial Club of Chicago," at 1 p. m. on Monday, May 27; an address on "Freight Interchange in Chicago" by L. T. Jamme, general manager, Chicago Transfer & Clearing Company, on May 28; a discussion on "Freight Collections and Deliveries," by Charles J. Harth, manager J. C. Zipprich Teaming Company, Oscar H. Bell, traffic manager Crane Company, C. O. Frisbie, traffic manager Armour & Company and James J. Wait, president Merchants Lighterage Company on May 29; and an address on "Railway Electrification" by W. F. M. Goss, director, engineering department, University of Illinois, and member Association of Commerce Committee on Smoke Abatement and Electrification, on June 3. The other subjects to be discussed are: "Passenger Subways for Chicago," "The Sub-Surface Pipe and Wire Net Work," "Transportation by Post" and "Methods for Reducing the Demand for Transportation."

Freight Rate on Material for Repairs of Cars Damaged on Foreign Lines.

Joseph W. Taylor, secretary of the Master Car Builders' Association, has issued to members the following circular concerning a proposed change in the M. C. B. rules:

Conference Ruling No. 333, of the Interstate Commerce Commission, reads as follows:

"333. Company Material.—Material for use in the repair of one of its cars was shipped by a carrier to the shop of a connecting line. Upon inquiry whether the material could move free of charge over both roads, it was held, That in cases of this kind company material may move without charge only over the line at whose expense the repair is made."

Inasmuch as present Rule 122 conflicts with this conference ruling, the Arbitration Committee suggests, and it will so recommend to the convention in June, that the first paragraph of Rule 122 be changed to read as follows:

"Rule 122. Companies shall promptly furnish to each other, upon requisition, and forward, freight charges from point of shipment to destination to follow, materials for repairs of their cars damaged upon foreign lines, excepting that the company having car in its possession at the time shall provide from its stock the following:

"Lumber, forgings, hardware stock, paint, hairfelt, piping, air-brake material and all M. C. B. standard material.

"Requisitions for such material shall specify that same is for repairs of cars, giving car number and initial of such car, together with pattern number or other data, to enable correct filling of requisition."

Under the ruling of the commission, material for repairs of foreign cars may be moved without charge over the line at whose expense the repairs are made, but your committee believes that less trouble and annoyance will be occasioned if the shipment is made on a freight rate from point of shipment to destination.

An Alternative to Government Ownership.

A suggestion of a plan by which the government might become a partner of the railways, by purchasing a part of their stock, as an alternative to complete nationalization, was made by B. L. Winchell, president of the Frisco Lines, in an address before the Peoria Transportation Club on May 16. He said in part:

"The matter of public control of privately owned property is one which must soon have serious consideration and definite determination.

"How to induce the owners of capital to invest it in property which is, in important details, to be managed by public authorities is as yet unknown.

"Although not yet prepared to advocate any such plan, we may have to come to some form of government partnership, instead of government ownership, which will be the fair and logical outcome of present tendencies, because it is fundamentally unfair to permanently give the owner of property no controlling voice in the management of it.

"We may yet find it wise to have the government purchase say 40 per cent. of the stock of the various railway companies; have a proportionate representation on the boards of control, and perhaps even guarantee future issues of bonds for the purpose of raising the necessary capital for needed facilities and equipment. Such guarantee will materially reduce interest rates in addition to making for a tendency to rate adjustments which will insure fair returns on Uncle Sam's investment in stocks.

"We will some day find a practical way, also, to have compulsory arbitration; it will some day be a legal crime for a railway employee to strike as well as for a railway official to refuse to arbitrate.

"Our cities depend upon daily transportation of commodities, and a way will and must be found to insure continuity of railway service."

The Traffic Man's and the Operating Man's Points of View.

J. C. Stubbs and J. W. Kendrick have each recently made exhaustive reports on Wabash Railroad's traffic and development possibilities for the protective committees which they respectively represent. Stubbs' report is said to be the less optimistic of the two, although both concur in the belief that \$40,000,000 to \$45,000,000 spent on the property in the next few years will produce big returns.

That Stubbs' report does not hold out as extravagant hopes as does the Kendrick report is attributed partly to the fact that as a traffic man he views the operating problems confronting the Wabash with greater alarm than would be felt by Kendrick, who is essentially an operating man and, therefore, in position to brush these considerations aside as capable of easy solution when money for their remedy is provided.

Kendrick's training on the Atchison has furthermore instilled in him a spirit of optimism. The entire Atchison staff have always been known as enthusiasts from the lowest up to the president, except when the latter is fighting mad, at which times he issues pessimistic utterances. These merely represent too much pressure on the steam valve and not a chronic state of mind.

On the other hand the Union Pacific officials have never expressed themselves in extravagantly optimistic or enthusiastic terms, but have conservatively plotted out a course which they have lived up to to the best of their ability, and the results achieved have been second to none. Whether it is better to overshoot or undershoot the mark is an opinion largely acquired by training and environments.—*Wall Street Journal*.

Chicago Freight Handlers' Strike.

Following the refusal of the Chicago railways to submit to arbitration the demands of the striking freight handlers who left their work on May 4, as reported in last week's issue, an effort was made by President P. J. Flannery of the Brotherhood of Railway Freight Handlers to extend the strike to other cities, but with little success. A few men walked out at Dubuque, Ia., Quincy, Ill., Galesburg, Ill., and Milwaukee, Wis., but their places were soon filled. On May 17 the Illinois state board of arbitration offered its services to adjust the differences between the railways and strikers, but was informed by W. A. Garrett, chairman of the General Managers' Association, that it was contrary to the policy of the railways to arbitrate with men who had left the service, and that so far as they were concerned the strike

was regarded as a closed incident. The railways are planning to establish in the Chicago district a plan of paying freight handlers on a tonnage basis, the rates of pay to vary according to the different conditions at the different freight houses, but to be based on present rates per hour.

Truckers now receive 22 cents an hour and by working 10 hours a day for six days a week earn a weekly wage of \$13.20. At the increased rates that the striking employees demanded, including overtime for the tenth hour and for Saturday afternoon, the weekly wage for the same amount of work now performed would be increased to \$19.15, or 45 per cent.

"Turning the First Sod"; New Process.

Ascending a platform surrounded by machinery for railway building, Gov. Aram J. Pothier, of Rhode Island, at Woonsocket, May 21, pulled the lever of a giant steam shovel on a farm near the town, and the work of constructing the Southern New England Railway, which will bring the Grand Trunk from Palmer, Mass., to tidewater in Providence was begun.

Special Committee on Relations of Railway Operation to Legislation.

The report submitted by the Special Committee on Relations of Railway Operation to Legislation, W. J. Jackson, chairman, to the railways supporting it was approved at a meeting of these roads in New York on May 15. Three hundred and thirty roads having 217,096 miles of line are supporting its work.

The committee, under the authority of standing resolution No. 10, has felt its way carefully in conducting conferences with representatives of employees and with administrative bodies, and, as a result of its experience and in view of the attitude of the Interstate Commerce Commission and other departments of the government and that of the representatives of the employees, feels that its field of usefulness has been greatly broadened, and that a permanent organization is necessary in order to fully perform its duty.

"Your committee," says the report, "is convinced that by settling differences of opinion between the railways before any discussions are had with other bodies, and by the presentation of the views of the railways as a whole, instead of individually, the results have been more satisfactory, and will be more advantageous in the future than by the adoption of any other course."

Regarding the subject of physical valuation of railways, the report says:

"A bill has been introduced into the House of Representatives, and reported favorably on March 30, 1912, providing for this.

"While it is possible this bill will not pass at this session of Congress, and while this is not a subject of which your committee has charge, yet in view of the repeated requests of the Interstate Commerce Commission for authority to make such a valuation and the reported willingness of Congress to grant it, your committee is of the opinion that the subject must soon become an active question, particularly inasmuch as in a considerable number of states valuations on varying bases are already being made.

"It is therefore probable that federal legislation will ultimately be necessary to provide uniformity of method. Your committee thinks that any bill on this subject will probably provide for the valuations to be made by the railways in the first instance, subject to the approval of the Interstate Commerce Commission, but this will work out that the valuation must be made by a method prescribed by that commission."

The report states that on January 5, 1912, a conference between representatives of employees and the committee developed that the working arrangement covering the interpretation of the hours of service act agreed on in June, 1911, has proved satisfactory to both parties, and that after conference with the Interstate Commerce Commission it was determined to continue this working arrangement until January 1, 1913, with the tacit acquiescence of that commission. The committee renews its recommendation that steps be taken to form operating committees in the several states, in order to present to legislators and to state commissions through practical men the practical questions involved in any orders or legislation proposed, and that the data

and publications of the committee be utilized in state affairs to harmonize the work of these committees.

Exhibit No. 3 of the committee's report gives a list of all bills relating to operation introduced in the sixty-third Congress.

The New York, Westchester & Boston.

The New York, Westchester & Boston line from the temporary station at 180th and Adams streets, New York City, to New Rochelle, N. Y., eight miles, will be opened May 29. The branch to White Plains will not be ready for operation for several weeks.

The road, which is a New York, New Haven & Hartford subsidiary, is a four-track high speed electric line, built to first class steam railway standards, and to be operated by multiple unit trains. It is four track from 180th street to a point a mile beyond Mount Vernon, where two tracks diverge to New Rochelle and a junction with the main line of the New Haven, while another two-track line diverges to White Plains. South from 180th street there is under construction a connection with the New Haven's six-track Harlem River branch at 132nd street.

International Railway Fuel Association.

The opening session of the fourth annual convention of the International Railway Fuel Association was held at the Hotel Sherman, Chicago, May 22. The membership is now 400 and 150 were present at the opening meeting.

The meeting was opened with prayer by Rev. Frederick E. Hopkins, followed by an address by the president, T. Duff Smith, of the Grand Trunk Pacific. Robert Quayle, superintendent of motive power, Chicago & North Western, addressed the meeting at length; he opposed the pooling of engines and emphasized the necessity of team work between the engineer and fireman in the economical use of fuel. He said that if the men were accustomed to the peculiarities of their own engines they could best adapt the fuel methods to suit them. Walter S. Bogle, president of the Crescent Coal and Mining Company, gave an excellent address from the coal producer's standpoint, in which he said that the cost of coal production had increased 100 per cent. within the last fifteen years, and that the recent laws in regard to safety appliances for mines and the conservation laws were tending to still further increase this cost. He concluded that while for a time coal companies might exist without increasing the price of coal, if the process continued it would eventually result in their bankruptcy, and that it was to the best interests of the consumer to pay a price that would permit the companies to remain solvent. He also said that labor demands had largely increased the cost of production. Labor unions should be incorporated so as to have the same responsibilities as to contracts as do other corporations. He advocated united effort on the part of labor employers in adopting methods to meet advancing demands of labor unions, and suggested that such work might well commence in the Railway Fuel Association. Dr. W. F. M. Goss then read a paper on Fuel as a Factor in Locomotive Capacity, which resulted in an interesting discussion. A full report of the convention will appear in the *Railway Age Gazette* of May 31.

Following is a list of the exhibitors:

- Duplicator Manufacturing Company, Chicago.—Machine for duplicating railway forms. Represented by W. J. Miskella.
- Goodman Manufacturing Company, Chicago.—Photographs of coal-cutting machines, electric mine locomotives and locomotives for general underground use. Represented by W. A. Miller, H. H. Small and C. F. Roeder.
- Gulick-Henderson Company, Pittsburgh.—Chemical testing station for determining actual heat of coal. Represented by H. Gulick, W. O. Collins, J. W. Henderson and C. H. Higgins.
- Osborne Valve & Joint Company, Chicago.—Working model of an Osborne "Nokut" valve for steam, air, water, gas, etc. Represented by C. M. Schneider and W. A. Tilley.
- Roberts & Schaefer Company, Chicago.—Working model of a 100-ton structural steel single bucket counterbalanced type of Holmes fireproof coaling station; photographs of various modern coaling and washing stations and also of a coal briquetting plant. Represented by C. T. Malcolmson and W. R. Ourand.
- G. L. Simonds & Company, Chicago.—Vulcan soot cleaner, Hays gas analysis instrument and Dean boiler tube cleaner. Represented by G. L. Simonds and F. A. Moreland.
- Shear-Klean Grate Company, Chicago.—Working model of the Shear-Klean grate. Represented by George Kohout.
- Stromberg-Carlson Company, Chicago.—Models of mine telephones, wall telephones, extension bells, etc. Represented by E. C. Lewis, C. W. Schaefer and C. A. Anderson.

National Association of Manufacturers.

The annual convention of the National Association of Manufacturers was held in New York City this week, with John Kirby, Jr., of Dayton, Ohio, president of the association, in the chair. In his opening remarks Mr. Kirby declared that the past year has witnessed the steady decline of labor unionism of the "Gompers type." The committee on interstate commerce and Federal incorporation in its report defends the Commerce Court. Although the court has not in all instances acted in perfect harmony with the Interstate Commerce Commission, it is not fair to assume that the court merits the criticism directed against it. The proposals for Federal incorporation laws have made little progress during the past year, and the manufacturers are urged to work for them in the interest of a sane regulation of industry. The prime function of our government should be to promote an attitude of sympathy and co-operation.

W. J. H. Boetcker, of Toledo, made an urgent plea for a strenuous campaign to further knowledge and skill in the various trades of our boys and girls. Workers must be taught that we are not their natural opponents because we are their employers, but that there is a mutuality of interest that binds more strongly than the differences which may from time to time arise, and which are sometimes unavoidable.

In the afternoon there was an exhibition of motion pictures showing the cause, effect and remedy for various kinds of industrial accidents, a model factory fire drill and a lifeboat drill at sea. More than 1,000 employers and delegations of workmen attended this exhibition. Frank E. Law, vice-president of the Fidelity & Casualty Company, New York, gave an address on "Workmen's Compensation for Accidents."

Western Railway Club.

The annual meeting of the Western Railway Club was held in the Karpen building, Chicago, on Tuesday evening, May 21. The membership of the club is now 1,437. The following were elected officers for the ensuing year: President, T. H. Goodnow, general superintendent, Armour Car Lines; first vice-president, H. H. La Rue, master car builder, Chicago, Rock Island & Pacific; second vice-president, W. B. Fall, superintendent, Mather Stock Car Company; secretary and treasurer, J. W. Taylor. The members were entertained with a musical program at the close of the meeting.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRANE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomaston, Boston, Mass.
 AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York; next convention, September 12, Seattle, Wash.
 AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill.; annual, June 18-21, Detroit, Mich.
 AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and September.
 AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York. Convention, October 7-11, Chicago.
 AMERICAN ELECTRICAL RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, 3d week in Oct., Baltimore, Md.
 AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, Monadnock Block, Chicago.
 AMERICAN RAILWAY MASTER MECHANICS' ASSOC.—J. W. Taylor, Old Colony building, Chicago. Convention, June 17-19, Atlantic City, N. J.
 AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—M. H. Bray, N. Y. N. H. & H., New Haven, Conn. Convention, July 9, Chicago.
 AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
 AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.
 AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York; spring meeting, May 28-31, Cleveland, Ohio.
 AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Convention, 3d week in January, 1913, Chicago.
 ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; annual, June 26, 1912, Quebec, Que.
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual, June 11, Atlantic City, N. J.; annual, October 21-25, Chicago.
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; annual, June 24, 1912, New York.
 ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conrad, 75 Church St., New York. Convention, Oct. 7-11, Chicago.
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.
 CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.
 CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.
 CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.
 ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.
 ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.
 GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.
 INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.
 INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago. Convention, May 22-25, Chicago.
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, Brown Marx building, Birmingham, Ala. Convention, July 23-26, Chicago.
 INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Convention, August 15, Chicago.
 MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
 MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Annual convention, June 12-14, Atlantic City, N. J.
 MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Convention, September 10-13, Denver, Col.
 NATIONAL RAILWAY APPLIANCES ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.
 NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.
 NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.
 PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d Tuesday.
 RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.
 RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York.
 RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.
 RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.
 RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.; next meeting, August 13-16, Roanoke, Va.
 RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L., S. W. Ry., St. Louis, Mo.
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.
 RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.
 RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. assocs.
 RAILWAY TEL. & TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.
 RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.
 ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. September 10-13, Buffalo, N. Y.
 ST. LOUIS RAILWAY CLUB.—B. W. Fraumenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.
 SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Niquist, La Salle St. Station, Chicago.
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.
 SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.
 TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.
 TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.
 TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.
 TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.
 TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 18, 1912, Louisville, Ky.
 TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.
 TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.; annual, Aug. 27-30, Chicago.
 WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.
 WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

On May 15 the Canadian Pacific established new steamship service between Tacoma, Wash., and Victoria, B. C.

The Illinois Traction Company has posted notices that on Memorial Day it will give every woman passenger on any of its lines a hat pin.

E. J. Dowie, general industrial agent of the New York Central Lines, was elected president of the Railway Industrial Association at its annual convention last week at Kansas City.

The Lehigh Valley has opened another freight station in New York City. It is maintained in connection with the Manhattan Terminal Company at the foot of Fortieth street, North river.

The Chicago & Alton, St. Louis, Iron Mountain & Southern, Texas & Pacific and International & Great Northern, on May 19 established a new through sleeping car line between Chicago and Houston, Tex., and one between Chicago and El Paso, Tex.

The Michigan Central was indicted by the federal grand jury at Indianapolis, Ind., on May 17 on 30 counts for false billing. Chapin & Company of Milwaukee were also indicted for accepting and soliciting concessions from the railways in the same connection.

A spar shipped recently from Shelton, Mason county, Washington, on the Peninsular Railroad, measured 102 ft. in length and was carried on two 41-ft. platform cars, with another car of the same length between them. The spar was 6 ft. 6 in. in diameter at the butt and 3 ft. 6 in. at the smaller end; and it scaled 9,000 ft. of lumber.

The Massachusetts Railroad Commission has authorized the Boston Elevated Railway, operating surface street railways in and around Boston, to carry freight on its cars in five towns. The order contemplates baggage and other things usually transported by express companies, and the commission reserves the right to modify it at any time.

The Ridgeway Coal Company, Wilkes-Barre, Pa., has sued the Lehigh Valley for \$1,500,000 damages alleged to have been sustained because of the refusal of the road to build a track to connect with the Ridgeway colliery in the town of Newport. The Lehigh Valley is charged also with preventing the coal company from building a connection to the Lackawanna railway.

The Baltimore & Ohio is to run a new 28-hour train, beginning May 26, between New York and Chicago via Pittsburgh. The B. & O. now has a 26-hour train which leaves New York in the morning. The new train will leave New York at 6 p. m. and arrive at Chicago at 9 p. m. This will afford connection with a number of the principal trains leaving Chicago for the West and Northwest.

Traffic Club of New York.

At the regular meeting of the Traffic Club of New York, which will be held at the Waldorf-Astoria hotel, on May 28, Luis Jackson (Erie) will deliver an address, entitled Industrial Development, in the course of which talk he will have some good points to make on the matter of export trade, judged from what he has seen on various trips abroad. The entertainment committee will present a vaudeville entertainment immediately after the address.

Promoting Agriculture.

The Agricultural Department at Washington finds that the railways of the country which are endeavoring to aid the development of agriculture number about three-fourths of the whole. That is to say, they own about three-fourths of the lines of the country. This, however, includes not alone those which run agricultural instruction trains, but also those whose activities take the shape of distributing free literature.

That railway officers are not the only men, outside the agricultural world, who see the need of improving the science and art of agriculture is indicated by the announcement in Chicago that Sears, Roebuck & Company, the mail order merchants of

that city, have given \$1,000,000 for this purpose. This sum, which will probably be used to establish farm bureaus in each county throughout large sections of the country, is to be apportioned in sums of approximately \$1,000 to a county. The money is to be put into the hands of the Crop improvement committee of the Council of Grain exchanges, the main office of which is in Chicago.

President Finley Reviews the Situation in the South.

"During the prolonged depression in the cotton textile industry mills of the southeast suffered in common with those of other cotton manufacturing localities. With revival of that industry they are again prosperous. By far the larger proportion of cotton mills of the southeast are in territory served by lines of the Southern Railway system and improved conditions in the industry are reflected in increased mill traffic. As with cotton, so with tobacco, timber, iron ore, and the other raw materials of the southeast, present tendencies are in direction of developing manufacture in proximity to the sources of production and to the building up of a large diversity of industries.

"While the late spring and the unusually wet weather have retarded farm work in many parts of the South, there has been comparatively little damage from high water in the territory directly served by the Southern Railway. We have relatively little mileage in localities affected by floods in the Mississippi valley and as the Southern Railway lines run at right angles to the river our losses have been less than would have been sustained had they been parallel with the stream.

"In former years many farmers of the cotton belt have been large buyers of supplies which they could very well have produced on their farms. In order to buy their supplies they have often been under the necessity of selling cotton regardless of market conditions. Increasing numbers of them are now raising their own supplies. They will consequently be able to market cotton with more regard for the economic demand for it and the result will prove beneficial to the entire southeastern section.

"The present outlook in the southeastern states is for the largest crop of corn ever made in that section and for increased production of other crops, while all through the territory traversed by our lines our live stock and dairy agents report increased interest in live stock and dairying, with a tendency toward improvement through purchase of pure-bred animals. In the raising of live stock the southeastern farmer not only has the advantage of long grazing seasons and an abundance of forage crops, but he has the further advantage of being able to use cotton-seed meal and hulls in combination with other feeds, thus finding a profitable use for a by-product of the cotton plant which was formerly largely wasted.

"Berries and vegetables are now moving freely from the more southern localities. The Georgia peach movement will soon begin and the present outlook is that Southern Railway lines will handle between five and six thousand carloads of peaches this year, as compared with about nine hundred carloads last year. The outlook for apples in Virginia, Western North Carolina, and other apple-producing localities on our lines is also very encouraging."

As to progress of improvements on the Southern Railway lines, President Finley said:

"Work now in progress will give the company the benefit of practically fifty miles of double-track north from Atlanta to Gainesville, Ga. It is expected that practically all of this new double-track will be placed in operation in time to be of service in handling the peach movement this year, and that all of it will be put into service early in the fall. Upon the completion of this work the company will have a total of 374 miles of double-track.

"Where traffic is heavy but where conditions are not yet such as to require double-tracking the company is carrying out the policy of constructing systems of lap-sidings to facilitate passing of trains. Since October, 1911, 24 lap-sidings have been put in service, aggregating 28.4 miles.

"The company has adopted the policy of installing automatic electric block signals to replace manual-controlled block signals on those parts of the line that have been double-tracked.

"Work on the large new inbound freight station at Atlanta, Ga., is progressing favorably. Additional yard and freight station facilities at Macon, Ga., used jointly by the Southern Railway and the Georgia Southern & Florida have been completed, in connection the Mobile & Ohio additional wharf facilities have

been provided at Mobile, Ala., and negotiations are under way for the establishment of a direct line of steamers to and from South American ports."—Interview in the Wall Street Journal.

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 119, giving a summary of car surpluses and shortages by groups from January 4, 1911, to May 9, 1912, says, "Total surplus on May 9, 1912, was 136,776 cars, on April 25, 1912, was 151,186 cars, and on May 10, 1911, was 188,847 cars. Compared with the preceding period there is a decrease in the total surplus of 14,410 cars, of which 11,180 are coal cars, this decrease being principally due to the resumption of coal traffic. There is a net increase in box car surplus of 1,043 cars. The increase is most apparent in groups 2 (New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania), 3 (Ohio, Indiana, Michigan and Western Pennsylvania), 4 (The Virginias and Carolinas), 5 (Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida) and 8 (Kansas, Colorado, Missouri, Arkansas and Oklahoma); and decreases are shown in groups 6 (Iowa, Illinois, Wisconsin, Minnesota and the Dakotas), 7 (Montana, Wyoming and Nebraska), 9 (Texas, Louisiana and New Mexico) and 10 (Oregon, Idaho, California, Arizona and Washington).

"Total shortage on May 9, 1912, was 6,678 cars, on April 25, 1912, was 12,305 cars, and on May 10, 1911, was 1,569 cars. Compared with the preceding period there is a decrease of 5,627 cars, of which 2,858 are box, 911 coal and 1,699 miscellaneous cars. The decrease in box car shortage is principally in groups 2, 5 and 6 (as above) and 11 (Canadian Lines). The decrease in coal car shortage is mostly in group 2. Compared with the same date of 1911 there is a decrease in the total surplus of 52,071 cars, of which 34,587 is in box, 639 in coal, 4,202 in flat and 12,643 in miscellaneous cars. There is an increase in the total shortage of

5,109 cars, of which 2,379 is in box, 938 in flat, 1,169 in coal and 623 in miscellaneous cars."

The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report, and the diagram shows total bi-weekly surpluses and shortages from 1907 to 1912.

Commerce Court Cases.

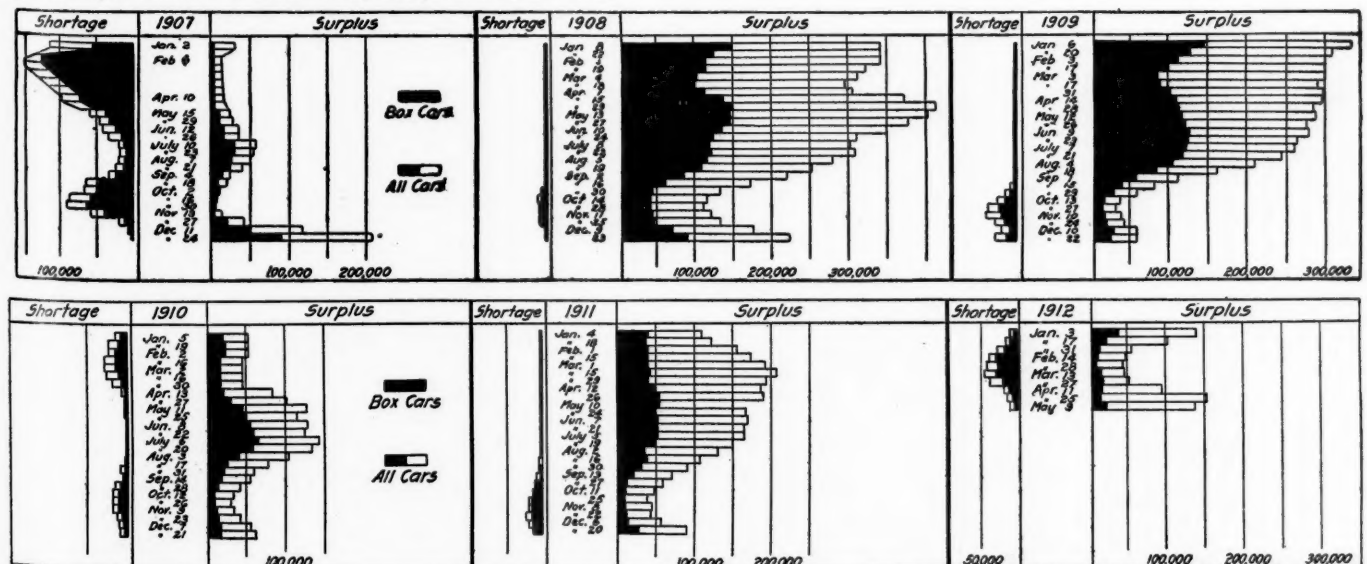
The clerk of the Commerce Court has issued a statement under date of May 13, calling attention to alleged mis-statements concerning the business of the court contained in a letter written by Secretary J. H. Marble of the Interstate Commerce Commission, in reply to a request for information by Representative Sims, the author of the bill to abolish the court, which was published in the *Congressional Record*. The statement gives the number of cases instituted in the Commerce Court up to May 6, as shown by the court record, as 30 instead of 28 as stated by Mr. Marble; the number transferred from the Circuit Courts to the Commerce Court as 36 instead of 33; the number in which permanent injunctions were issued by the Commerce Court as 9 instead of 11; the number of Commerce Court cases appealed to the Supreme Court as 18 instead of 16, and the number of cases on the Commerce Court's docket on May 6 as 22 instead of 24.

In connection with the recent filing of a petition in the Commerce Court by a number of Pennsylvania brick makers, asking the court to set aside an order of the commission denying them reparation while reducing the rate complained of, the Washington correspondent of the *Traffic World* says that of the last eight cases brought to the court six were filed by shippers who think that the Interstate Commerce Commission did not give them what they were entitled to receive. Of the 36 cases brought to the Commerce Court from the Circuit Courts only four, or one-ninth, were instituted by shippers, while of the 33 appealed directly from the Commission to the Commerce Court, eleven, or one-third, were brought there by shippers.

CAR SURPLUSES AND SHORTAGES.

Date.	No. of roads.	Surpluses				Shortages			
		Box.	Flat.	Coal gondola and hopper.	Other kinds.	Box.	Flat.	Coal gondola and hopper.	Other kinds.
Group *1.—May 9, 1912.....	7	303	405	1,860	142	494	152	525	0
" 2.—" 9, 1912.....	23	1,748	80	35,870	2,152	5	0	9	1
" 3.—" 9, 1912.....	25	2,619	120	26,356	2,988	0	200	15	44
" 4.—" 9, 1912.....	10	1,772	31	442	1,602	926	435	473	5
" 5.—" 9, 1912.....	18	1,814	35	5,205	1,428	27	94	61	7
" 6.—" 9, 1912.....	24	3,948	346	5,797	4,876	486	120	125	10
" 7.—" 9, 1912.....	4	440	52	877	746	60	0	25	3
" 8.—" 9, 1912.....	18	3,075	359	5,136	2,672	29	0	0	2
" 9.—" 9, 1912.....	10	597	190	316	1,553	0	0	0	0
" 10.—" 9, 1912.....	22	4,264	1,570	1,647	10,800	9	0	0	600
" 11.—" 9, 1912.....	6	46	73	6	418	1,258	453	0	25
Total	167	20,626	3,261	83,512	29,377	3,294	1,454	1,233	697

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages in 1907 to 1912.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF MARCH, 1912.

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses			Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total, inc. misc.	Maintenance of way and structures, equipment.	Traffic.	Transportation.					
Ann Arbor.....	292	\$141,678	\$34,387	\$186,065	\$14,829	\$4,030	\$7,720	\$125,703	\$59,661	\$13,986	\$49,212	\$14,966
Arizona Eastern.....	366 ¹	135,299	180,885	316,184	21,859	2,431	47,343	292,466	88,639	12,000	76,829	52,891
Atlanta, Birmingham & Atlantic.....	662	232,320	292,046	524,366	29,419	16,691	123,506	237,634	54,412	15,700	38,712	33,189
Atlantic City.....	167	76,673	43,469	120,142	26,727	2,057	77,518	121,342	8,336	7,000	3,342	39,475
Belt Ry. Co. of Chicago.....	21	.....	.....	.....	237,730	12,728	.....	154,519	83,231	7,000	76,961	11,738
Butte, Anaconda & Pacific.....	46	84,879	97,896	182,775	19,482	745	47,618	81,845	16,051	2,000	14,051	14,438
Central Vermont.....	411	247,553	65,651	313,204	4,977	5,056	184,070	255,116	8,590	12,200	71,403	5,832
Chesapeake & Ohio Lines.....	2,812 ¹	2,559,089	398,989	2,958,078	260,346	51,872	990,178	2,059,839	1,012,047	84,750	920,670	292,230
Chicago & Erie.....	270	351,888	46,472	398,360	50,368	21,105	257,219	432,597	7,498	8,952	98,738	98,738
Chicago, Indianapolis & Louisville.....	617	365,574	119,961	485,535	74,402	16,566	222,392	416,155	118,781	22,652	96,129	36,955
Chicago, Terre Haute & Southeastern.....	351	163,636	14,334	177,970	18,237	3,906	61,300	121,175	61,162	8,707	51,956	6,518
Hocking Valley.....	352 ¹	521,263	62,031	583,294	52,536	8,232	197,938	367,477	244,331	28,660	215,571	153,535
Houston, East & West Texas.....	191	74,787	24,627	99,414	14,399	2,837	41,535	73,407	32,287	3,916	28,371	17,498
Houston & Texas Central.....	788	256,593	111,882	368,475	62,299	20,083	223,241	187,811	18,460	20,538	3,670	36,797
International & Great Northern.....	1,159	539,044	160,972	700,016	115,259	21,608	385,974	661,317	94,222	22,000	71,497	.....
Kanawha & Michigan.....	177 ¹	181,408	24,401	205,809	27,175	2,189	66,136	147,324	63,739	8,608	55,115	35,902
Minneapolis & St. Louis.....	1,586	488,675	123,250	611,925	66,873	18,215	295,420	500,218	151,587	25,728	125,919	131,967
Minneapolis, St. Paul & S. Ste. Marie.....	3,770 ¹	1,752,202	418,995	2,171,197	160,151	48,535	825,291	1,372,537	915,909	134,594	775,170	411,131
Missouri, Kansas & Texas of Texas.....	1,346 ¹	412,440	245,441	657,881	114,651	26,132	490,889	783,109	63,828	21,338	87,299	96,617
New Orleans, Texas & Mexico.....	277 ¹	116,573	19,444	136,017	30,279	528	67,058	123,492	20,754	.....	20,754	13,740
New York, Susquehanna & Western.....	152	177,397	42,897	220,294	17,081	2,421	103,457	156,924	92,322	17,873	71,441	38,494
Northwestern Pacific.....	402 ¹	81,216	172,386	253,602	53,522	3,518	97,448	203,671	21,119	11,077	10,442	8,421
Philadelphia & Reading.....	1,014 ¹	3,783,225	505,366	4,288,591	275,105	41,210	1,437,349	2,577,983	1,870,846	87,413	1,837,629	522,199
Pittsburgh, Shawmut & Northern.....	278 ¹	146,992	7,527	154,519	16,691	1,069	4,376	103,923	52,846	1,562	51,284	39,102
Port Reading.....	21	177,738	.....	177,738	178,248	30	52,975	58,989	119,259	3,800	127,292	59,041
St. Joseph & Grand Island.....	319	71,905	34,252	106,157	17,024	5,023	60,036	111,913	2,345	6,664	8,664	24,302
St. Louis & San Francisco.....	4,721	2,217,843	817,878	3,035,721	299,512	83,100	1,352,624	2,275,077	987,965	158,690	829,275	275,570
Southern in Mississippi.....	282	43,388	22,695	66,083	23,851	2,192	38,899	79,359	7,063	4,218	11,281	16,567
Spokane, Portland & Seattle.....	556 ¹	232,471	127,641	360,112	48,366	6,350	101,487	204,531	176,639	53,400	123,792	41,736
Texas & Pacific.....	1,885	931,935	314,969	1,246,904	192,726	35,891	694,839	1,210,428	122,357	48,489	68,486	15,606
Trinity & Brazos Valley.....	463	162,978	35,461	198,439	59,235	9,458	107,083	209,596	3,174	3,500	6,674	11,508
Ulster & Delaware.....	129	54,368	14,665	69,033	8,613	3,269	32,269	58,414	14,430	3,300	11,136	11,471
Western Pacific.....	2,515	1,899,369	439,668	2,339,037	211,838	64,879	1,070,490	1,882,594	318,487	71,655	240,225	153,846
Western.....	935	215,844	80,206	296,050	63,520	27,687	1,070,490	1,882,594	318,487	71,655	240,225	153,846
Seaboard Air Line.....	3,070 ¹	1,529,887	473,395	2,003,282	300,168	62,354	793,397	1,518,144	695,387	80,000	611,759	201,175
Sunset.....	593 ¹	39,044	9,990	49,034	12,699	987	14,721	29,973	20,201	2,187	18,014	33,959
Ann Arbor.....	292	\$1,111,311	\$413,174	\$1,524,485	\$170,171	\$590,432	\$69,643	\$1,047,115	\$576,074	\$125,870	\$443,646	\$64,476
Arizona Eastern.....	366 ¹	1,108,368	300,912	1,409,280	214,317	396,770	58,179	803,309	690,692	90,508	601,805	215,516
Atlanta, Birmingham & Atlantic.....	662	1,881,023	507,546	2,388,569	254,321	151,438	959,907	1,893,723	630,598	126,400	504,198	28,658
Atlantic City.....	167	591,699	905,530	1,497,229	264,649	21,725	779,920	1,167,256	408,179	63,000	306,776	62,484
Belt Ry. Co. of Chicago.....	21	.....	.....	.....	123,168	5,324	786,849	1,192,343	796,809	63,809	733,000	51,615
Butte, Anaconda & Pacific.....	46	715,560	77,686	793,246	88,835	6,318	384,245	665,149	181,588	19,764	161,824	26,399
Central Vermont.....	411	1,994,705	815,886	2,810,591	315,982	66,590	1,494,906	2,430,220	600,219	108,900	494,979	71,725
Chesapeake & Ohio Lines.....	2,812 ¹	2,568,078	406,783	2,974,861	216,171	459,639	7,807,094	16,832,597	8,623,217	762,817	7,867,932	308,386
Chicago & Erie.....	270	3,085,732	1,224,548	4,310,280	520,315	767,973	1,884,456	3,654,453	415,792	142,539	273,253	272,268
Chicago, Indianapolis & Louisville.....	617	3,212,352	1,224,548	4,436,900	672,023	138,555	1,810,814	3,480,922	1,405,107	208,466	1,196,641	14,954
Chicago, Terre Haute & Southeastern.....	351	1,308,691	153,690	1,462,381	198,839	240,310	470,717	1,003,723	492,471	78,300	412,781	.....
Hocking Valley.....	352 ¹	4,646,510	668,981	5,315,491	658,056	74,894	1,718,173	3,479,942	2,155,239	329,818	1,825,421	186,598
Houston, East & West Texas.....	191	675,514	246,740	922,254	174,137	17,911	330,978	657,938	318,642	38,555	280,087	64,436
Houston & Texas Central.....	789	2,897,694	1,344,921	4,242,615	648,175	171,803	1,932,402	3,698,174	885,892	201,367	672,384	505,151
International & Great Northern.....	1,159	4,664,205	1,233,390	5,897,595	655,761	150,166	2,429,261	2,034,439	2,124,806	192,500	1,929,702	.....
Kanawha & Michigan.....	177 ¹	2,062,552	259,410	2,321,962	277,290	20,106	713,595	1,477,010	892,314	79,543	812,768	66,971
Minneapolis & St. Louis.....	1,586	4,278,969	1,296,168	5,575,137	714,561	887,681	2,706,305	4,662,493	1,297,315	255,281	1,041,765	72,674
Minneapolis, St. Paul & S. Ste. Marie.....	3,770 ¹	14,125,381	4,269,310	18,394,691	1,837,400	406,436	6,484,463	11,632,532	7,871,858	1,833,349	6,768,276	2,126,485
Missouri, Kansas & Texas of Texas.....	1,346 ¹	5,008,274	2,831,956	7,840,230	1,815,112	222,489	4,530,924	7,731,332	945,843	243,974	693,797	1,243,120
New Orleans, Texas & Mexico.....	277 ¹	924,277	170,621	1,094,898	232,539	35,110	512,210	984,166	180,565	3,473	177,092	45,260
New York, Susquehanna & Western.....	152	1,563,423	443,959	2,007,382	211,718	17,287	878,020	1,363,994	892,999	160,862	727,558	53,802
Northwestern Pacific.....	402 ¹	1,040,894	1,380,103	2,420,997	445,487	29,664	956,921	1,880,470	737,388	108,442	628,245	112,097
Philadelphia & Reading.....	1,014 ¹	2,810,236	5,202,219	8,012,455	2,901,250	369,860	1,183,668	21,336,868	13,172,009	810,690	12,611,418	921,898
Pittsburgh, Shawmut & Northern.....	278 ¹	1,054,724	77,488	1,132,212	123,819	9,867	340,633	746,093	403,591	14,173	389,418	216,776
Port Reading.....	21	1,025,880	.....	1,025,880	1,036,946	278	317,642	392,280	644,666	34,200	651,027	3,689
St. Joseph & Grand Island.....	319	765,528	312,113	1,077,641	193,899	44,937	534,172	1,018,771	166,793	61,671	105,361	11,348
St. Louis & San Francisco.....	4,721	19,775,832	8,491,035	28,266,867	3,570,781	815,782	10,982,266	20,250,510	10,243,569	1,436,826	8,806,743	218,633
Southern in Mississippi.....	281	536,337	292,199	828,536	205,356	21,622	348,055	692,923	200,645	43,629	157,016	36,448
Spokane, Portland & Seattle.....	556 ¹	2,110,772	1,306,792	3,417,564	376,047	342,629	934,831	1,819,595	1,826,429	367,204	1,452,391	49,678
Texas & Pacific.....	1,885	9,371,599	3,179,495	12,551,094	1,456,920	272,314	5,722,825	9,093,347	3,680,386	570,380	3,060,880	383,566
Trinity & Brazos Valley.....	463	1,703,657	333,897	2,037,554	260,775	87,376	963,077	1,777,094	329,170	39,339	289,331	170,281
Ulster & Delaware.....	129	477,895	284,413	762,308	109,496	12,583	333,173	581,015	232,338	29,700	291,378	.....
Western Pacific.....	2,515	14,558,950	5,300,892	19,859,842	2,457,185	3,827,969	9,032,127	16,671,800	4,903,181	636,663	4,247,636	1,209,136
Western.....	935	2,966,547	807,657	3,774,204	734,495	207,995	3,202,122	3,202,122	30,905	135,419	528,133	.....
Seaboard Air Line.....	3,070 ¹	11,508,988	3,886,395	15,395,383	2,480,495	541,816	6,201,207	12,151,071	4,991,077	677,000	4,300,743	617,328
Sunset.....	593 ¹	544,722	138,640	683,362	106,730	406	252,540	409,479	301,889	29,305	272,584	168,147

† Figures shown here are for period September 16, 1911, to March 31, 1912.
 Operated in previous period—355; † 2,232; † 350; † 376; † 1,348; † 264; † 376; † 1,022; † 240; † 551; † 3,046; † 57. — Indicates Deficits, Losses and Decreases.

INTERSTATE COMMERCE COMMISSION.

The commission has further suspended until December 14 the proposed new freight classification No. 51, which was filed by the railways in Western Freight Association territory.

The commission has suspended until September 17, 1912, the proposed advances of the Chicago, Milwaukee & St. Paul, and the Minneapolis & St. Louis, in rates on malt from Minneapolis and other points to Missouri River points.

In conference ruling the commission has held that whenever a carrier makes any allowance to a shipper under Section 15 of the act (for service connected with transportation), such allowance must be published in its tariffs and open to all furnishing such service; otherwise each such allowance must be considered to be a rebate from the published rate.

In a report of a conference ruling in these columns May 3, it was stated that free transportation might be given to instructors, furnished by companies supplying appliances to railways, over roads on which the instructor was compelled to travel to reach the railway on which he was to give the instruction. This is incorrect. The commission "held further that such experts are not railway employees in the sense that they may be given free transportation to travel over one road or system for the purpose of reaching another road or system, to which they may have been assigned on like duty."

The commission has amended its orders for issuing passes by adding: "For a special or unusual occasion (such as a convention of an association of railway employees, to attend which its members would use the lines of two or more carriers), when compliance with the foregoing regulations would be needlessly burdensome to the carriers concerned, consideration will be given by the commission to an application from the initial carrier (made after an agreement with the other carrier or carriers over whose lines it is proposed to issue free transportation) for authority to issue a special form of pass, bearing coupons for the several carriers over whose lines the pass is to be effective. The commission will specify the extent to which such authority, if granted, shall modify the provisions of the existing regulations."

Plan for Distribution of Coal Cars Ordered.

Colorado Coal Transportation Assn. v. Denver Rio Grande et al. Opinion by Commissioner Meyer:

At present there is no different plan for the distribution of coal cars to different mines in Huerfano and Las Animas counties, Colo. This leads up to fear for discrimination and for the suspicion of discrimination. Railways are ordered to prescribe and publish rules governing this distribution, and file them within 60 days. (23 I. C. C., 458.)

Cotton Rates Raised.

In re investigation and suspension of advances in rates by cars for the transportation of cotton and cotton linters. Opinion by Commissioner Clark:

The rates on cotton and cotton linters from Texas producing points to Galveston and New Orleans are the same. The commercial interests of Galveston complained to the Texas railway commission that these rates were unduly discriminatory against Galveston in favor of New Orleans. The state commission would have reduced the rates to Galveston, had not the carriers anticipated this move by raising the rates to New Orleans from 52½ cents to 63 cents per 100 lbs., including the cost of compression. The New Orleans board of trade entered a complaint with the commission against these advances and the increased rates were suspended until September, 1912. The complainant argued that the advance in the rates was primarily due to contemplated action on the part of the Texas railway commission to reduce the Texas rates; also that New Orleans and Galveston are competitive ports for the exportation of cotton from Texas, and that the practice of carriers has been to equalize rates via competitive ports. The defendants admit that the present low rates to New Orleans are reasonable, but they assert that the traffic would be unprofitable if the rates to Galveston were reduced. They also admit that they would not have increased the rate to New Orleans had not the Texas com-

mission proposed the reduced rates to Galveston. The commission found that the increased rates to New Orleans would not greatly reduce the traffic to that point on account of certain advantages, which it possessed over Galveston, and therefore decided that the suspended rates were not unreasonable. The orders suspending the advances will be vacated. (23 I. C. C., 405.)

Rates on Bulky Articles.

Brunswick-Balke-Collender Company v. Atchison, Topeka & Santa Fe et al. Opinion by Commissioner Clark:

In this case, the complainant attacked the rule of the western classification, which states that articles, too bulky to be loaded in a 36-ft. box car, shall be charged at actual weight and class rate, but that in no case shall the charge for the shipment be less than that for 5,000 lbs. at first class rate. The defendant is willing to pay this rate where its articles are loaded on open cars, on account of being too bulky to be loaded in box cars, but claims that when its articles, though too bulky to be put in 36-ft. cars, are loaded in 40-ft. box cars, it should be given the regular rate. The commission decided that the rule for bulky articles in the official classification should be substituted for the present rule in the western classification, with the exception that the minimum weight of 4,000 lbs. in the official classification should be increased to 5,000 lbs. This rule as amended, will provide that when articles are loaded on open cars, on account of being too bulky to be loaded in box cars, they shall be charged at actual weight and class rate for each article, provided that in no case, shall the charge for each article be less than that for 5,000 lbs. at first class rate. (23 I. C. C., 395.)

Certain Concentration Charges Found Unreasonable.

Red River Oil Co. et al v. Texas & Pacific et al. Opinion by Commissioner Clark:

While rates providing for transit privileges may be lower than the reasonable through rate, railways cannot impose a penalty unless the transit privilege is used on top of their reasonable rate; and it is discriminatory for railways to grant concentration at competitive points while refusing it at non-competitive points. (23 I. C. C., 438.)

The Commission Refuses to Drop the Spokane Case.

City of Spokane et al v. Northern Pacific et al. Supplemental Report. Opinion by Chairman Prouty:

An injunction was granted by the Commerce Court against the order of the Interstate Commerce Commission in 19 I. C. C., 162, and an appeal on this injunction is now to be considered by the Supreme Court in October. It is now announced that the railways and the attorney for the city of Spokane have come to an agreement, and it is proposed to discontinue the case before the commission. This the commission cannot do without considering the reasonableness of the proposed new rates, and the commission will feel entirely free to dispose of this whole question when it is determined by the Supreme Court what action can be taken. (23 I. C. C., 454.)

Dock Facilities Must Be Furnished to All on the Same Terms.

Mobile Chamber of Commerce et al v. Mobile & Ohio et al. Opinion by Commissioner Lane:

The Southern Railway and the Mobile & Ohio own docks at Mobile, to which they make ship-side delivery on export traffic. They publish rates which include not only service to Mobile, but supplementary service of switching to their own wharves, the use of the docks, and the unloading of cars. For these services they make no separate terminal charge. They also absorb the charges for delivery over the city dock, the municipal wharf near the Southern's docks. When ships are forced to berth at other docks than the three named, shippers have to pay a charge for switching, docking and unloading, in addition to the rate to Mobile. Where a railway has a wharf, at which its tariffs offer delivery, and at which part of the shipping public is served, but to which it does not give all access, it must make delivery at the same rate at some other wharf. This is thought to be in ac-

cordance with the conclusion of the Supreme court in the Pensacola case, 198 U. S., 483, because in the Pensacola case the railway based its argument on the common law, while in the present case the commission makes its finding under section 1, of the act. The commission cannot regard the Mobile docks or the defendants' in any other light than as public terminals. A railway need not make a rate to ship-side unless its lines extend there, but making such a rate must give the shipper access to the terminal to receive the traffic. The service that railways give to the shipper in the interior, who uses one line of ships from the port, must be given to another shipper, who wishes to use a different line of ships, provided both lines of ships submit to the same reasonable conditions imposed by the rail carrier. (23 I. C. C. 417.)

Temporary Compromise in Inter-Mountain Case.

Railroad Commission of Nevada v. Southern Pacific et al. Maricopa County Commercial Club v. Sante Fe, Prescott & Phoenix et al. Opinion by Commissioner Lane:

Delay in the ultimate decision of the questions involved in the so-called long-and-short-haul cases (see *Railroad Commission of Nevada v. So. Pac. Co. and Maricopa County Commercial Club v. S. F., P. & P. Ry. Co.*, 21 I. C. C., 329) led the complainants to make request upon the commission for the establishment of commodity rates complementing the class rates previously instituted. The commission thereupon entered an order upon the carriers to show cause why such commodity rates should not be instituted. The matter coming on for hearing, the carriers defendant presented a proposed schedule of commodity rates which they volunteered to put into effect pending the determination of the questions involved in the long-and-short-haul cases, and covering the great volume of the traffic moving now in carload lots into Nevada and Arizona. The carriers stated at the time that in presenting these rates they were not presented as reasonable, but were regarded by them as established to meet a situation of embarrassment. The complainant would not agree that such commodity rates as were offered met their full demand, but they submitted the question as to the advisability of such rates going into effect to the commission.

Upon full consideration of the matter we see no reason why this commission should object to the course of procedure suggested by the carriers, and will permit upon short notice the carriers to institute the proposed commodity rates, it being expressly understood that the commission in no wise passes upon the reasonableness of these rates or upon any question of discrimination arising from their institution. Our sole purpose is to give as great a degree of relief as is possible immediately to these communities which have been contending before the commission for years against rates which were contrary to the principles of the act. (23 I. C. C., 456.)

Class Rates for Switching Service Upheld.

Merchants & Manufacturers Association et al v. Pennsylvania Railroad et al. Opinion by Commissioner McChord:

While almost universally the charge for a switching service is on a per-car basis, the facts of record held insufficient to justify a finding that the assessment of class rates for switching at Baltimore unduly discriminates against that city as compared with cities where the per-car basis obtains. Except where joint through rates are now in effect covering delivery to or from another carrier within the city of Baltimore, the existing class rates charged for interchanging traffic found to be unreasonable, and the case held open for 30 days to permit defendants to amend their tariffs.

Terminals are either open or they are not; and if a carrier holds itself out as ready to permit the use of its tracks at a certain charge, the fact that such charge may be prohibitive does not mean that the terminals are not open. On the contrary, it would seem to be a potent argument for the reduction of charges for the use of tracks or terminal facilities already extended. That these defendants offer each to the other the use of their respective tracks or terminals is shown by the fact that freight is actually interchanged after its arrival in Baltimore, and for this service charges are provided in tariffs published and filed both with this commission and the Public Service Commission of Maryland. It follows that having elected to perform this service the charge therefore must be reasonable. (23 I. C. C. 474.)

STATE COMMISSIONS.

The railway commissioners of Canada propose to issue an order forbidding railways to put an embargo on any traffic for a period longer than four days without first giving the commission ten days' notice, specifying the reason why the embargo is to be issued.

The New York State Public Service Commission Second district, has postponed until next year the enforcement of its order requiring the use of oil fuel on the locomotives of the Cranberry Lake Railroad; this upon condition that the present engines have satisfactory ash pans and smoke stacks. The state conservation commission has found that the company's right of way has been cleaned up and has withdrawn its objections to the use of coal-burning engines.

The New York Public Service Commission has denied the petition of the International Railway to be exempted from stenciling and numbering their poles, carrying over-head wires. The order requiring the stenciling of poles was made so as to permit inspectors of the commission to promptly and correctly report unsafe construction. The application for exemption was solely on the ground of expense, and the commission says that this expense, three cents per pole, is not great enough to make it reasonable to exempt any company.

The Indiana commission has issued to the railways a circular calling upon them to improve their bridge warnings or tell-tales. Generally throughout the state these devices are defective, the arrangement of the ropes being such that the exhaust of a locomotive will blow them out of position so that they get caught on their supports, and thereafter are of no value as a warning. If the railways do not cure this trouble within 60 days, the commission will proceed to enforce the law, under which the railways can be required to raise all bridges to a height of 21 ft. above the track. A postscript to the circular says that "the commission is carefully noting such companies as fail to respond to its general circulars, with the intention, so far as those failing are concerned, to proceed to enforce penalties rather than make recommendations."

COURT NEWS.

The Commerce Court has refused to enjoin the enforcement of the Interstate Commerce Commission's decision in the citrus fruit precooling case, in which the commission permitted shippers to do their own precooling, and avoid refrigeration charges.

The temporary restraining order issued last week by Judge Carpenter, of the United States district court at Chicago, enjoining the railways from canceling their joint through rates with the Michigan, Indiana and Illinois lines and the Ludington Transportation Company, in accordance with the recent decision of the Interstate Commerce Commission was dismissed by Judge Landis on May 21 after a hearing on an application of the boat lines to have injunction made permanent. Judge Landis held that his court had no jurisdiction. During the hearing District Attorney Wilkerson read a letter from Chairman Prouty of the commission stating that if the railways did not cancel the joint rates they would be prosecuted for rebating.

The Supreme Court of Missouri, in a decision by Judge Brown, has held constitutional the law passed by the last legislature requiring all corporations to pay employees at least twice a month. The court seems to think that where wages are not paid oftener than once a month men are likely to be discouraged and sit down and fold their hands instead of trying to earn a living; and in conclusion, the decision says: "By common consent, an implied duty rests upon the state to aid those unfortunates who through sickness, old age, extreme poverty or other mischance are unable to supply themselves with those things which are necessary for their continued existence, and consequently any law which encourages people to work by holding out assurances that they shall promptly receive the wages they earn, whether financially able to go to law or not, tends to encourage honest effort, and helps to build up an industrious, thrifty and self-respecting people, who, instead of becoming paupers, will be able to pay their debts, and, being protected by the state in their efforts to better their condition, will have a direct interest in maintaining their protector, and in its good order, moral and general welfare."

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Henry Alexander Scandrett, who has been appointed interstate commerce attorney of the Union Pacific and the Southern Pacific, with office at Chicago, as has been announced in these columns, was born April 8, 1876, at Faribault, Minn. He graduated from Shattuck Military Academy in 1894, and after graduating from the University of Minnesota with the A. B. degree in 1898, he received the LL.B. degree from the same university in 1900. In January, 1901, he entered the office of the general claim agent of the Union Pacific at Omaha, and was transferred to Kansas City as claim adjuster a few months later. In October, 1901, he was made an assistant attorney for Kansas and Missouri; he was second assistant from June, 1902, to April 28, 1908, and first assistant from the latter date until June, 1911, when he was made assistant interstate commerce attorney, with office at Chicago, from which position he has just been promoted, to succeed F. C. Dillard, elected vice-president and general counsel of the Rock Island Lines.



H. A. Scandrett.

Joseph H. Young, whose election as president of the Spokane, Portland & Seattle and the Oregon Trunk, with office at Portland, Ore., has been announced in these columns, was born January 17, 1864, at Salt Lake City, Utah. He attended the University of Utah from 1877 to 1881, and in September of the latter year began railway work with the Utah Southern, now the Oregon Short Line, as warehouseman, clerk and operator. He was with the Union Pacific as bill clerk and ticket agent at Ogden, Utah, from 1882 to 1886, and was superintendent of the Utah division of the same road, now the O. S. L., from 1891 to 1902. For two years from 1886 he was traveling passenger agent of the Chicago & North Western, and from 1888 to 1891 general agent of the Salt Lake & Eastern, a road which was afterwards reorganized under his supervision as the Utah Central. Mr. Young was general superintendent of the Rio Grande Western, now part of the Denver & Rio Grande, at Salt Lake City, for two years from 1902, and then became general superintendent and later general manager of the Colorado & Southern at Denver. For a short time during 1907 he was general superintendent of the St. Louis & San Francisco. He was general superintendent of the Southern Pacific at San Francisco from 1907 to 1910, and in the latter year was elected president of the Alaska Steamship Company, the Northwestern Steamship Com-



J. H. Young.

pany, Ltd., the Northwestern Commercial Company, the Northwestern Fisheries Company, and the North Coast Lighthouse Company, and vice-president of the Copper River & Northwestern, which offices he resigns to become president of the Spokane, Portland & Seattle, the Oregon Trunk Railway, the Oregon Electric Railway, the United Railways, the Spokane & Inland Empire, the Pacific & Eastern, and the Dalles, Portland & Astoria Navigation Company, with office at Portland.

L. H. Clar has been appointed secretary and auditor of the Eureka Nevada, formerly the Eureka & Palisade, with office at Palisade, Nev.

James Hagerman, general counsel of the Missouri, Kansas & Texas, with office at St. Louis, Mo., has resigned on account of ill health, and will become consulting counsel. Effective June 1.

George P. Johnson, general superintendent of the Norfolk & Western, with office at Bluefield, W. Va., has been appointed sole receiver of the Detroit, Toledo & Ironton, succeeding Benjamin S. Warren, George K. Lowell and Thomas D. Rhodes, resigned.

W. M. Miller has been appointed freight claim auditor of the Atchison, Topeka & Santa Fe Coast Lines and the Grand Canyon Railway, with office at Los Angeles, Cal. Bowman Jarrott has been appointed claim agent of the Southern Kansas, the Pecos & Northern Texas, and the Pecos River—all Texas lines of the Santa Fe system—with office at Amarillo, Tex., succeeding Edward Prichett.

Operating Officers.

C. W. Hole has been appointed general manager of the Washington Western, with headquarters at Three Lakes, Wash.

George P. Johnson, general superintendent of the Norfolk & Western, with office at Bluefield, W. Va., has resigned, as noted under Executive, Financial and Legal Officers.

E. E. McCarty has been appointed trainmaster of the First and Second districts of the Albuquerque division of the Atchison, Topeka & Santa Fe Coast Lines, with office at Winslow, Ariz., succeeding O. F. Higginson.

F. Wear has been appointed assistant superintendent of the Great Northern, with office at Whitefish, Mont., succeeding W. Carswell, transferred. J. E. Hills has been appointed trainmaster, with office at Whitefish, succeeding W. W. McFadzen, resigned.

J. E. Sexton, assistant to president and traffic manager of the Quincy Western at Hartwell, Cal., has been appointed general manager of the Eureka Nevada, formerly the Eureka & Palisade, and L. R. Gladden has been appointed superintendent of the Eureka Nevada, both with offices at Palisade, Nev.

J. W. Eber, who recently resigned as superintendent of the Adirondack division of the New York Central & Hudson River, has been appointed general superintendent of the Toronto, Hamilton & Buffalo, with office at Hamilton, Ont., succeeding to the duties of H. H. Adams, general manager, resigned to become president of the Kansas City Terminal Railway.

Charles A. Allen, superintendent of the Cincinnati division of the Erie, at Marion, Ohio, has been appointed assistant to the general superintendent with office at Galion. Robert E. Woodruff, superintendent of the Rochester division, at Rochester, N. Y., succeeds Mr. Allen. Edmund I. Bowen, superintendent of the Delaware and Jefferson divisions, at Susquehanna, Pa., succeeds Mr. Woodruff. William A. Baldwin, superintendent of the Chicago and Lima divisions, at Huntington, Ind., succeeding Mr. Bowen. Theodore Mackrell, superintendent of the Allegheny and Bradford divisions, at Salamanca, N. Y., succeeds Mr. Baldwin. Fred M. Hawley, trainmaster at Susquehanna, Pa., succeeds Mr. Mackrell; W. J. English, assistant superintendent, at Jersey City, N. J., has been appointed superintendent of the Susquehanna and Tioga divisions, with office at Hornell, N. Y., succeeding Clarence D. Taylor, resigned and Augustus E. Ruffer has been appointed assistant superintendent of the New York division, with office at Jersey City, succeeding Mr. English.

Traffic Officers.

R. P. Kimbrough has been appointed freight soliciting agent of the Southern Railway, with office at Atlanta, Ga., succeeding C. S. Powers, promoted.

A. E. Wilkinson has been appointed division freight agent of the Intercolonial, with office at Halifax, N. S., succeeding E. S. Smiley, assigned to other duties.

H. J. Perkins has been appointed industrial agent of the Lake Shore & Michigan Southern and other New York Central lines west of Buffalo, with headquarters at Cleveland, Ohio.

H. T. Yeaton has been appointed westbound agent of the Cleveland, Cincinnati, Chicago & St. Louis, with office at St. Joseph, Mo., succeeding A. S. Morrill, transferred to St. Louis, Mo.

F. J. Vanderblue has been appointed commercial agent of the Chesapeake & Ohio of Indiana, with headquarters at Milwaukee, Wis., succeeding A. H. Heckendorf, resigned to engage in other business.

H. D. Swayze, general superintendent of the Kalamazoo, Lake Shore & Chicago, with office at Kalamazoo, Mich., has been appointed traffic manager, with office at Kalamazoo, succeeding E. H. Vivian.

J. A. McWilliams, traveling freight agent of the Southern Railway, at Montgomery, Ala., has been appointed traveling freight agent, with office at Kansas City, Mo., succeeding J. R. L. Wulff, promoted.

E. A. Shewe, city passenger and ticket agent of the Oregon Short Line at Ogden, Utah, has been appointed division freight and passenger agent, with headquarters at Butte, Mont., succeeding F. D. Wilson, assigned to other duties.

J. C. Lettice, soliciting freight agent of the Georgia Southern and Florida, at Macon, Ga., has been appointed commercial agent, with office at Miami, Fla., succeeding R. E. Davis, resigned. W. B. Dewberry succeeds Mr. Lettice, with office at Macon.

Lloyd O. Miller has been appointed traveling freight agent of the Atlantic Coast-Savannah Line and Central-Savannah Line, with headquarters at Philadelphia, Pa., reporting to F. A. MacBride, commercial agent, succeeding W. C. Shannon, transferred.

W. P. Snyder, general eastern agent of the Kansas City, Mexico & Orient, at New York, has been appointed commercial agent of the Grand Trunk, the Central Vermont and the National Despatch, with headquarters at New York, succeeding H. M. Baker, resigned.

F. C. Dumbeck, assistant general freight agent of the St. Louis & San Francisco at Kansas City, Mo., has been transferred to St. Louis, Mo., and E. F. Edgecomb, commercial agent at Kansas City, has been appointed assistant general freight agent, with office at Kansas City.

W. G. Howard, commercial agent of the Chicago & Alton and the Toledo, St. Louis & Western at Cleveland, Ohio, has been appointed general agent in the freight department, with office at Pittsburgh, Pa., succeeding John H. McAdoo, deceased. J. C. Kempf succeeds Mr. Howard.

G. M. Weaver, assistant general freight agent of the Michigan Central at Detroit, Mich., has been appointed district freight agent of the New York Central Lines, with office at Chicago. F. H. Thompson, general agent at Detroit, succeeds Mr. Weaver, and William Rogers succeeds Mr. Thompson.

Charles E. Kingston, whose appointment as assistant general freight agent of the Pennsylvania Railroad, has been announced in these columns, was born at Philadelphia, Pa., May 12 1858, and was educated in the schools of that city. He is the son of the late Stephen B. Kingston, who was general freight agent of the Pennsylvania Railroad prior to 1880. Mr. Kingston entered the service of the Pennsylvania Railroad in the fall of 1877 as a clerk at Dock street freight station, Philadelphia. On January 1, 1880, he was transferred to the general freight agent's office, and held various positions in that department until October 1, 1885, when he was made chief rate clerk. He was promoted to chief clerk to the assistant general freight agent in January, 1890, remaining in that position until June 1, 1897, when he was made division freight agent of the Philadelphia, Wilmington & Baltimore, now the Philadelphia, Baltimore & Washington, at Wilmington, Del., and now becomes assistant general freight agent of the Pennsylvania Railroad, with office at Philadelphia.

Engineering and Rolling Stock Officers.

H. W. Coddington has been appointed engineer of tests of the Norfolk & Western, with office at Roanoke, Va.

Joseph Collins has been appointed roadmaster on the Idaho division of the Oregon Short Line, with headquarters at Shoshone, Idaho.

The headquarters of H. B. Welsh, supervisor of the Chautauqua branch, Buffalo division of the Pennsylvania Railroad, will be removed on June 1, from Brocton, N. Y., to Dunkirk.

C. E. Denney, signal engineer of the Lake Shore & Michigan Southern, at Cleveland, O., has been appointed also signal engineer of the Lake Erie & Western, the Ft. Wayne, Cincinnati & Louisville and the Northern Ohio, with headquarters at Cleveland. Effective June 1.

H. Wanamaker, superintendent of shops of the New York Central & Hudson River, at Depew, N. Y., has been appointed superintendent of shops at West Albany, N. Y., succeeding L. H. Raymond, resigned. J. G. Parsons succeeds Mr. Wanamaker, with office at Depew, and B. F. Shone has been appointed general foreman of the Depew shops.

F. W. Thomas has been appointed supervisor of apprentices of the Atchison, Topeka & Santa Fe, and the Atchison, Topeka & Santa Fe Coast Lines, with office at Topeka, Kan. P. O. Walker has been appointed roadmaster of the Oklahoma division, with headquarters at Guthrie, Okla., succeeding L. H. McIntire. F. T. Perris has been appointed manager of the fuel department of the Coast lines, with office at Olinda, Cal., and F. C. Ripley has been appointed assistant manager of the fuel department, with office at Midoil, Cal.

Frank Lee, whose appointment as principal assistant engineer of the Canadian Pacific, with office at Winnipeg, Man., has been announced in these columns, began railway work in 1894, on leaving the Sheffield Scientific School of Yale University. His first experience was on location and construction of the Trinidad government railways, at Trinidad, in the British West Indies. Two years later he entered the engineering department of the Chicago & North Western, and remained with that road for six years, having been rodman, instrument man, assistant engineer, and assistant signal engineer. He then went with the Canadian Pacific as signal engineer, and in 1904 was made assistant division engineer at Calgary, Alberta. He was assistant engineer of the Western lines at Winnipeg during 1905, and from 1906 until April 1, 1912, the date of his recent promotion, he was division engineer, with headquarters at Winnipeg.

Special Officers.

Dr. J. H. Reuss has been appointed chief surgeon of the San Antonio & Aransas Pass, with office at Yoakum, Tex., succeeding Dr. A. Graves, Jr., who has had his headquarters at San Antonio, Tex., the hospital department having been removed from San Antonio to Yoakum.

George Bradshaw, assistant to the claims attorney of the New York Central & Hudson River, at New York, has been appointed general safety agent, of New York Central Lines, both East and West, with headquarters at New York and at Chicago, reporting to the general claims attorney and to the general manager for the lines East, and reporting to the general claims attorney and to the assistant vice-president for the lines West.

OBITUARY.

A. R. G. Heward, assistant secretary of the Canadian Pacific, with office at Montreal, Que., died on May 17, at Montreal, at the age of 52. Mr. Heward had been in the service of the Canadian Pacific for about 30 years.

Franklin Hinchey, formerly and for 50 years land and tax agent of the New York Central & Hudson River, died on May 14, at his home at Gates, N. Y. He was at one time in charge of this department for the whole N. Y. C. & H. R., but as the system grew his jurisdiction was restricted to the main line of the New York Central between Syracuse, N. Y., and the eastern line of Erie county, with portions of the West Shore, the Rome, Watertown & Ogdensburg and the Pennsylvania division. Mr. Hinchey retired from active service in 1910.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE BOSTON & MAINE will soon be in the market for 150 locomotives.

THE MISSOURI & LOUISIANA has ordered one mogul locomotive from the Baldwin Locomotive Works.

THE OKLAHOMA & EASTERN has ordered one mikado locomotive from the Baldwin Locomotive Works.

THE CHICAGO, BURLINGTON & QUINCY has ordered 50 mikado locomotives from the Baldwin Locomotive Works.

THE NEWPORT NEWS SHIP BUILDING & DRY DOCK COMPANY has ordered one four-wheel switching locomotive from the Baldwin Locomotive Works.

THE SEABOARD AIR LINE has ordered 20 Pacific type locomotives, 5 six-wheel switching locomotives, and 1 four-wheel switching locomotive from the Baldwin Locomotive Works.

THE NEW YORK, NEW HAVEN & HARTFORD mentioned in the *Railway Age Gazette*, May 17, as negotiating with the American Locomotive Company for 15 consolidation locomotives, has ordered those locomotives from that company. This company has also ordered 24 electric locomotives from the Westinghouse Electric & Manufacturing Company.

THE VULCAN IRON WORKS, Wilkesbarre, Pa., has received orders for locomotives as follows: 2 saddle-tank locomotives, Wolcott & Pomeroy, New York; 1 saddle-tank locomotive, Chattanooga Iron & Coal Company, Chattanooga, Tenn.; 2 saddle-tank locomotives, Moffett & Mead, San Francisco, Cal.; 1 saddle-tank locomotive, Richmond Cedar Works, Norfolk, Va.; 2 saddle-tank locomotives, C. W. Reynolds, Sagamore, Mass.

CAR BUILDING.

THE BOSTON ELEVATED is in the market for 20 passenger cars.

THE NEW YORK, NEW HAVEN & HARTFORD is in the market for 26 parlor cars.

THE WABASH has ordered 5 all-steel mail cars from the American Car & Foundry Company.

THE BOSTON & ALBANY will soon be in the market for 20 passenger cars and 1,000 freight cars.

THE NEW YORK CENTRAL & HUDSON RIVER has ordered 20 milk cars from the Merchants' Dispatch Transportation.

THE SEABOARD AIR LINE has ordered 1,000 thirty-ton box cars from the Pressed Steel Car Company, and is now in the market for 200 hopper cars and 25 caboose cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for six 50-ton flat bottom steel gondola cars and six 50-ton self-clearing steel hopper cars.

THE ST. LOUIS & SAN FRANCISCO has ordered 1,000 coal cars from the American Car & Foundry Company in addition to the 6,000 coal cars mentioned in the *Railway Age Gazette* of May 10.

THE PHILADELPHIA & READING, mentioned in an unconfirmed item in the *Railway Age Gazette* of May 17 as being in the market for 2,000 freight cars, is now in the market for 1,000 freight cars.

THE BOSTON & MAINE will soon be in the market for 2,300 hopper cars, 1,600 box cars, 300 automobile cars, 150 refrigerator cars, 100 flat cars, 100 heater cars, 100 ice cars, 80 caboose cars, and 150 passenger cars.

THE MISSOURI & NORTH ARKANSAS has ordered 100 box cars from the American Car & Foundry Company and is in the market for three coaches, two mail cars, three combination cars, 50 furniture cars and 50 flat cars.

IRON AND STEEL.

THE ILLINOIS CENTRAL is in the market for 25,000 tons of rails.

THE NORTHERN PACIFIC has ordered 1,000 tons of bridge material from the Fort Pitt Bridge & Iron Works.

THE GREAT NORTHERN has ordered 2,200 tons of bridge material from the Fort Pitt Bridge & Iron Works.

THE HARRIMAN LINES have ordered 84,552 tons of rails, as follows: 17,900 tons from the Colorado Fuel & Iron Company; 10,925 tons from the Illinois Steel Company; 13,727 tons from the Tennessee Coal & Iron Company, and 4,200 tons from the Pennsylvania Steel Company. The total order includes 34,144 tons of 90-lb. rails, and 12,608 tons of 75-lb. rails.

GENERAL CONDITIONS IN STEEL.—The new business of the Steel Corporation since the first of May has been larger than at any corresponding period in the history of the organization. The mills have sufficient tonnage on their books to guarantee full operation well into the latter part of the year, and for the first time in two years, consumers of certain classes of materials are beginning to doubt the ability of the steel companies to make deliveries on specified time. The fact that premiums are being paid for prompt delivery on plates is an evidence of the strength of the general steel situation.

SIGNALING.

New Installations of Block Signals, Interlocking, Telephones for Train Despatching, Etc.

THE GRAND TRUNK has awarded to the Hall Signal Company the contract to install block signals on 82 miles of its line through the state of Indiana, as follows: Maynard to Sedley, double track, 20 miles; Valparaiso to Grangers, double track, 55 miles; Valparaiso to Sedley, single track, 5 miles; Olivers to St. Joe River, single track, 2 miles. On double track the signals will be Hall, style "K," automatic, bottom post, pull-clear, three position type, operating in the upper quadrant and arranged to be worked "normal clear." On single track the system will be controlled manual with continuous track circuits. The materials and specifications will conform to the Railway Signal Association standards throughout. The work will be commenced at once, and the sections between Maynard and Sedley and between Valparaiso and Sedley are to be put in service by September 1.

THE SOUTHERN RAILWAY is to install automatic block signals from Denim, N. C., to Charlotte, 96 miles, nearly all double track, and has let the contract for their installation to the General Railway Signal Company. The signals will be electric motor semaphores, top-post mechanism, three-position, worked in the upper quadrant, and the block sections will be about two miles long. Alternating current will be used and power will be furnished from a plant at Spencer, N. C. In case of failure of this plant, power can be taken from lines of the Southern Power Company at Greensboro and at Charlotte. The power line along the railway will convey current at 4,400 volts. This wire will be on a new line of poles, to be erected, and besides supplying power for the signals will furnish lights for all of the stations along the road, as well as electric power for certain other purposes. The automatic signals on 12 miles of road in and near Lynchburg, Va., have lately been completed. It is announced that the Southern Railway intends to install automatic signals on all of its double track lines.

A transandine line is approaching completion, which will open up additional traffic between Argentina and Chili. The Great Southern railway has for some time been quietly but effectively pushing on its new line towards the Chilian frontier from Neuquen. This portion of the Great Southern's system was only constructed in deference to the express wish of the Argentine federal government at a time that war was threatened between Argentina and Chili. A substantial guarantee accompanied the concession. Up till now some 40 miles have been completed, leaving about 70 miles further to be laid to reach the Chilian frontier. It is anticipated that the line will be fully equipped and in active operation by the month of August, 1913. The chief traffic carried will be cattle, of which there is an ever increasing trade being conducted between Chili and Argentina. Naturally the other cattle-carrying lines, the Buenos Ayres & Pacific and the Argentine transandine railways, will be effected, but with the anticipated increase in the industry of cattle breeding there ought in the near future to be sufficient remunerative freights for all of these railways.

Supply Trade News.

William C. Wilson, in the sales department of the Transportation Utilities Company, New York, has resigned that position.

It is reported that the Canadian Car & Foundry Company, Montreal, Que., will shortly begin the construction of a large new car-building plant at Port Mann, Ont.

The Sherwin-Williams Company, Chicago, has moved its office from the Steger building to the eleventh floor of the Peoples Gas building, Michigan avenue and Adams street.

The Otis Elevator Company, will on June 15 move its general offices from 17 Battery place, New York, to its own new building, at Eleventh avenue and Twenty-sixth street, New York.

The plant of the American Steel Foundries, New York, at East St. Louis, Ill., is being prepared for regular operation on June 1. This plant has large orders for car material and will run at almost full capacity.

F. D. Reemer, who has been assistant purchasing agent of the American Car & Foundry Company, New York, has been appointed purchasing agent of the Haskell & Barker Car Company, Michigan City, Ind., with office in that city.

The Chicago Car Door Company, Chicago, has received orders for doors for 1,000 box cars being built by the Chicago, Milwaukee & St. Paul, also for 400 cars for the New Orleans, Mobile & Chicago, and 20 for the St. Louis, Rocky Mountain & Pacific.

J. F. MacEnulty, general manager of the Western Steel Car & Foundry Company, Chicago, has been made general sales manager of the Pressed Steel Car Company, Pittsburgh, Pa., and of the Western Steel Car & Foundry Company, with office in New York. This is a newly created position.

The Kip Brush Company, New York, has made Wood, Bowers & Company, St. Louis, Mo., its southern representative. The Kip company recently organized a special railway department under the charge of Harry M. Baxter, formerly in charge of production and sales for the Wolfe Brush Company.

At the recent annual meeting of the Cement Products Exhibition Company, Edward M. Hagar, president of the Universal Portland Cement Company, Chicago, was elected president. It was decided to hold the sixth annual Chicago cement show in the Coliseum, January 16-23, 1913, but to hold no shows in New York and Kansas City, Mo.

Frederick Topping, president of Topping Brothers, Inc., New York, manufacturers of and dealers in railway and heavy construction hardware, died on May 22 at his home in Summit, N. J., of heart disease, at the age of 59. Mr. Topping was born in London, Eng., and came to this country about 50 years ago. The firm of Topping Brothers was founded by him and his brother, Joseph Topping, in 1885.

The plan submitted to the depositing stockholders of the Hall Signal Company, New York, last month, has, in accordance with the deposit agreement of May 10, 1911, been declared effective. An underwriting syndicate will be formed, and the plan put into effect. The plan provides for the formation of a new company to be capitalized as follows: \$1,000,000 six per cent., 20-year convertible (into preferred stock) debenture bonds, of which \$50,000 must be called each year, commencing four years after issue, or earlier, if the operations for the year show that it has been earned, and before any dividend is paid on the preferred stock for that year; \$2,000,000 seven per cent. cumulative preferred stock; and \$3,000,000 common stock. The new company will acquire the property of the Hall Signal Company, subject to its present first mortgage of \$250,000. Present stockholders may, until June 6, subscribe at \$100 per share for preferred stock of the new company, in an amount equivalent to 50 per cent. of present holdings. They will receive, with such preferred stock, common stock of the new company in an amount equivalent to their present holdings. The new company will be assured of \$1,000,000 fresh capital, of which up to \$500,000 may be used to purchase such debts of the Hall Signal Company as the creditors will not consent to sell for new convertible debentures. Of the preferred stock, \$1,000,000 will be held in the treasury for the redemption of the debentures when converted. Of the common stock \$1,000,000 will be used to secure the underwriting and to remunerate the reorganization committee.

Railway Construction.

New Incorporations, Surveys, Etc.

ALBERTA RAILWAY & IRRIGATION Co.—See Canadian Pacific.

CANADIAN PACIFIC.—A special meeting of the Georgian Bay & Seaboard is to be held on June 13 to decide whether additional bonds should be authorized for the construction and equipment of the new branch from Port McNicholl, Ont., to the Ontario & Quebec at Bethany Junction, which will be opened for business soon. H. C. Oswald, secretary, Montreal.

A contract has been given to John Timothy, Winnipeg, Man., for building an extension of the Alberta Railway & Irrigation Company's line from Stirling, Alb., 25 miles easterly. This section will be built this year. J. G. Sullivan, Winnipeg, is chief engineer.

CHICAGO, MILWAUKEE & PUGET SOUND.—An officer writes that work is now under way on a branch from Beverly, Wash., south to Hanford, 45 miles, and on an extension from a connection with the main line at Plummer, Idaho, to Bell, Wash., as well as on a branch from Tiflis, Wash., to Nepple on Moses lake, 15 miles. Some minor revision of line is being made on the Tacoma Eastern. E. O. Reeder, chief engineer, Seattle.

CLEAR LAKE.—An officer writes that contracts are to be let within the next few months to build from Lakeport, Lake county, Cal., east to Hopland, Mendocino county, 25 miles. There will be one short steel bridge and a 450-ft. tunnel. The line will traverse a rich agricultural country. C. M. Hammond, president, Lakeport; C. R. Rankin, chief engineer, Hopland; and R. D. Hatch, financial agent, San Francisco, Cal. (July 14, p. 104).

EDMONTON, DUNVEGAN & BRITISH COLUMBIA.—Grading contracts have been let for work on 33 miles from Edmonton, Alta., as follows: To D. F. McArthur, 10 miles; to Porteous Brothers, 10 miles; to J. F. Cassils, 3 miles, and to L. A. Johnson, 10 miles. A contract has been let for clearing the right of way for 70 miles. The general contract for building the line from Edmonton to the Athabasca river crossing, about 120 miles, has been let to D. F. McArthur, Edmonton. The company was incorporated in 1907, to build from Edmonton in a northwesterly direction via Dunvegan to Fort George, B. C. T. Turnbull, chief engineer, Edmonton.

EL PASO & SOUTHWESTERN.—An officer writes that track laying has been started on the extension from Fairbanks, Ariz., to Tucson, 67 miles. MacArthur Brothers Company has the contract for the grading work, the American Bridge Company for the bridge steel, and the Missouri Valley Bridge & Iron Company for erecting the bridges. The maximum grades will be 1 per cent., and maximum curvature 3 deg. There will be three steel bridges to have a total length of 1,036 ft. There will also be a station, a freight house and a roundhouse at Tucson. H. J. Simmons, chief engineer, El Paso, Tex.

ERIE.—Contracts have been let for double-tracking work between Marion, Ohio, and North Judson, Ind., as follows: To Eyre, Shoemaker & Company, Philadelphia, Pa., from Marion, Ohio, to Kenton, 25 miles, from Preble, Ind., to Uniondale, 12 miles, and from Huntington to Laketon, 20 miles; to the Ferguson & Edmondson Company, Brookville, Pa., from Kenton, Ohio, to Harrod's, 18 miles, and from Elgin to Wren, 16 miles; to the Patterson Moran Company, Morgantown, W. Va., from Harrod's to Lima, nine miles; to John R. Lee, Paterson, N. J., from Lima to Elgin, 20 miles, and from Wren, Ohio, to Preble, Ind., 13 miles; to Jones Brothers, Columbus, Ohio, from Rochester, Ind., to North Judson, 31 miles. A contract has not yet been let for the section from Laketon, Ind., to Rochester, 22 miles. W. J. Harahan, vice-president, New York. (March 15, p. 525).

GEORGIAN BAY & SEABOARD.—See Canadian Pacific.

GREAT NORTHERN.—President C. R. Gray is quoted as saying that millions of dollars are to be spent this year and next year in extending lines into virgin territory of Washington and Oregon, and into the province of British Columbia, to reach the rich grain fields of western Canada by means of north and south feeders. The work under contract from eastern Washington to the Pacific coast will be rushed to completion, and additional contracts will be let soon for extensive development in northern

Washington. Development of subsidiary lines in Oregon will be carried out by the Spokane, Portland & Seattle and other Hill lines.

The Great Northern has plans made for the construction of a 400-mile line during the next five or six years. This new line is to run from a point on the New Rockford-Williston line in North Dakota, a little west of New Rockford, through North Dakota into Montana and thence west to Lewistown. From Lewistown to Benchland, a line has recently been completed. Benchland is about in the middle of Montana, on the Great Northern line that runs south from the main line at Shelby to Laurel, near Billings. North from Benchland no new work will be necessary, as the route will run north along the Laurel-Shelby line to Vaughn. From Vaughn west to Augusta, Mont., about 35 miles, the Great Northern is building an extension which will soon be finished. From Augusta the new line will be built in a northerly direction to a point near Java on the main line. The heaviest grades will be encountered on this section. Java is just west of the great divide. The new route from the main line near Java will run south to connect with the Shelby-Laurel line in Montana, thence to Lewistown and almost due east until it joins the New Rockford-Williston line in North Dakota, which in turn meets the Fargo-Surrey line, just completed, at New Rockford. The work this year on the proposed extension will consist of building the section from Crane, Mont., on the Yellowstone river, east to the Missouri river, North Dakota, about 105 miles. Grading will be carried out eastward from Lewistown, Mont. The new route will give the Great Northern an alternate transcontinental road and will obviate the necessity of double tracking the main line through Montana.

KETTLE VALLEY.—An officer writes that extensions are to be built westward from Midway, B. C., north to Carmi, thence west via Penticton, to Princeton, and north to Merritt, a total of 276 miles. Work is now under way from Midway to Carmi, and on 30 miles south from Merritt. L. M. Rice & Company has a contract for grading from Carmi west 31 miles, and Penticton west 40 miles. A. McCulloch, chief engineer, Penticton.

KINGSTON & PEMBROKE.—See Kingston, Ont., under Railway Structures.

LAWTON RAILWAY & MINING COMPANY.—An officer writes that this company is building a line from Lawton, Okla., north via Ft. Sill, to Medicine Park, 16 miles. Track has been laid on two miles. Contracts will not be let for the work. There will be two trestles of 70 ft. each, and a car barn is to be built. B. R. Stephens, president, McAlester.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been given to the Jobson-Gifford Company, New York, for the catenary foundations in connection with the electrification of the line from Stamford, Conn., to New Haven.

NEW YORK, WESTCHESTER & BOSTON.—See item under General News regarding the opening for business of a section of this road.

PERE MARQUETTE.—See an item regarding improvements to be carried out by this company under Railway Financial News.

SACRAMENTO VALLEY (Electric).—An officer writes that the plans call for building from Woodland, Yolo county, Cal., via Williams, Willows, Germantown, Orland and Corning to Red Bluff, Tehama county. Contracts for the work will probably be let in about nine months. There will be some car barns and shop buildings. C. L. Donahue, president; M. Dozier, Jr., engineer, Willows, Cal.

ST. JOHN VALLEY.—Contracts have been let for building three sections, on which work is to be started at once, it is said, as follows: To the Corbett Construction Company, from St. John, N. B., to Fredericton; to the Quebec Construction Company, from Fredericton to Woodstock, and to Kennedy & McDonald, from Woodstock to Grand Falls. The Woodstock town council has offered a free site for railway shops, and they will probably be built at that place. A. R. Gould, president. (Feb. 16, p. 321.)

ST. LOUIS & SAN FRANCISCO.—Announcement has been made that this company will build 100 miles of branch lines tapping Peoria, Ill., and Springfield.

SAN ANTONIO BELT TERMINAL COMPANY.—This company was recently incorporated in Texas, with \$200,000 capital, by the Missouri, Kansas & Texas interests, to build a 15-mile belt line

to connect all the yards and stations of the railways entering San Antonio, Tex. It is understood that the formation of the company means the construction of a terminal by the Missouri, Kansas & Texas. C. E. Schaff, president, St. Louis, Mo.; E. Chamberlin, vice-president, and W. Walthall, secretary and treasurer, both of San Antonio, and C. N. Whitehead, assistant secretary and treasurer, New York. (May 10, p. 1079.)

SAN PEDRO, LOS ANGELES & SALT LAKE.—An officer writes that work has been finished on the branch from Moapa, Nev., southeast to St. Thomas, about 22 miles, and the line is now open for traffic. E. G. Tilton, chief engineer, Los Angeles, Cal. (December 1, p. 1149.)

SOUTHERN RAILWAY.—This company will improve its line between Macon, Ga., and Brunswick during the coming summer. Eight passing tracks aggregating 27,300 ft., or over five miles, are to be constructed. These will be located at Cochran, at Empire, at Godwinsville, at Chaucey, at Achord, at Helena, at Scotland, and at Lumber City. The company has recently completed work on 13 passing tracks between Macon and Atlanta. W. H. Wells, chief engineer construction, Washington, D. C.

SPOKANE, PORTLAND & SEATTLE.—See Great Northern.

TACOMA EASTERN.—See Chicago, Milwaukee & Puget Sound.

TIDEWATER SOUTHERN.—This company, which was incorporated in March as a consolidation of the proposed Tidewater & Southern and the Tidewater & Transit, has made a mortgage to secure an issue of \$4,000,000 bonds. The company plans to build from Stockton, Cal., via Turlock, to Fresno, also some branch lines through San Joaquin county and adjacent territory.

TIDEWATER & SOUTHERN.—See Tidewater Southern.

TIDEWATER & TRANSIT.—See Tidewater Southern.

VALDOSTA, FORT GAINES & MONTGOMERY.—See an item regarding this company under Railway Financial News.

WASHINGTON ROADS.—It is said that construction work will be started about July 1 on a line up Salmon creek via East Chehalis, Wash., to reach timberlands. The Monarch Lumber Company, Portland, Ore., and the Metcalf Shingle Company, Kelso, Wash., are back of the project.

WASHINGTON WESTERN.—An officer of this company writes that the line will be opened for business about June 1 between Machias, Wash., Three Lakes and Woodruff. An extension from Three Lakes east and thence north to Granite Falls is expected to be finished about September 1. C. W. Hole, general manager, Three Lakes.

RAILWAY STRUCTURES.

DES MOINES, IA.—Work has been started on a new freight depot for the Chicago, Burlington & Quincy at this point.

FAIRBANKS, ARIZ.—See El Paso & Southwestern under Railway Construction.

KINGSTON, ONT.—The Kingston & Pembroke, which is controlled by the Canadian Pacific, will construct a new turntable at Kingston, also make repairs to buildings and culvert work, and carry out improvements covering buildings and culverts, ditching, putting in additional ballast, and laying some new rails. The cost of the work will be about \$200,000.

NEWARK, N. J.—The Lehigh Valley is making plans for putting up a brick passenger station, 110 ft. x 46 ft. and 45 ft. high at the corner of Meeker avenue and the railway company's right of way in Newark.

PORT HURON, MICH.—See an item regarding improvements on the Pere Marquette at Port Huron under Railway Financial News.

TOLEDO, OHIO.—See an item regarding improvements on the Pere Marquette at Toledo under Railway Financial News.

UTICA, N. Y.—The New York Central & Hudson River will make improvements at Utica, to include extending the freight yards and putting up a new passenger station. Work is already under way on the substructure for the passenger station. The cost of the improvements will be about \$1,500,000.

WOODLAND, CAL.—See Sacramento Valley (Electric) under Railway Construction.

Railway Financial News.

AMERICAN RAILWAYS.—Senator William C. Sproule has been elected a director to succeed William F. Harrity, deceased.

BALTIMORE & OHIO.—It is said that \$200,000,000 bonds may soon be authorized, \$50,000,000 of which will probably be 4 per cent. convertible bonds, exchangeable for the common stock at about 110; in which event an additional issue of common stock would have to be provided for. The remaining \$150,000,000 may take the form of refunding 4 per cent. bonds out of the proceeds, of which certain underlying bonds which are callable, may be retired; and the balance will be used for the purposes of the company and to pay off the company's notes.

BANGOR & AROOSTOOK.—The Aroostook Construction Company, the holding company for the Bangor & Aroostook, has increased its capitalization from \$50,000 to \$500,000 and has issued \$2,500,000 5 per cent. collateral trust notes of May 1, 1912-1917, of which \$1,500,000 have been issued for the purpose of refunding some floating debts of the railway and of the construction company. The notes are secured by \$1,350,000 Bangor & Aroostook consolidated mortgage 4 per cent. bonds, 20,000 shares of the stock of the Bangor & Aroostook, which involves the control, and 1,750 shares of the Northern Telegraph Company stock. The notes have been sold to Brown Bros. & Co., New York, and the Old Colony Trust Company, Boston, Mass.

BOSTON & MAINE.—J. P. Morgan & Company, New York, have bought \$12,000,000 one-year 4 per cent. notes, from the proceeds of the sale of which \$5,000,000 will be used to pay off that amount on B. & M. one-year notes, maturing June 15, 1912; the balance will be used for construction, etc.

CANADIAN NORTHERN.—Edward Lowber Stokes, Philadelphia, Pa., has sold to the public \$2,000,000 equipment trust 4½ per cent. certificates dated April 1, 1912 and maturing in semi-annual installments from April 1, 1913, to April 1, 1922. These notes are secured by equipment which cost over 33 per cent. more than the par value of the notes.

CANADIAN PACIFIC.—See Southampton Railway, also item under Railway Construction News.

CHICAGO RIVER & INDIANA.—This company has made a mortgage to secure an issue of first mortgage 5 per cent. 40-year bonds. Of these bonds \$600,000 are authorized and the present issue to be \$100,000, the balance will be reserved to retire the outstanding \$500,000 first mortgage 5 per cent. bonds, which are redeemable after September, 1915. Additional bonds may be issued for the cost of additional properties and franchises since October, 1911, through purchase, construction, consolidation, etc., but none shall be issued for equipment in substitution and replacement of that owned on that date.

DENVER, NORTHWESTERN & PACIFIC.—A judgment for \$1,940,588 was entered in the district court at Denver, Col., on May 10, in favor of W. W. Watson, receiver for the Denver Railway Securities Company, the holding company of the railway. The judgment represents the amounts advanced in the form of interest on \$4,000,000 Colorado & Utah Construction Company notes, now deposited as security for \$3,500,000 notes of the Denver Railway Securities Company, to May 1, 1912, and also \$500,000 of the principal of the loan paid by the Securities company.

DETROIT, TOLEDO & Ironton.—Judge Clarence W. Sessions, of the federal court for the western district of Michigan, at Detroit, Mich., on May 12 confirmed the appointment of George P. Johnson, of Bluefield, West Virginia, as sole receiver of the property.

GALVESTON, HOUSTON & HENDERSON.—Henry Martin, general manager of the International & Great Northern, has been elected a director, succeeding Judge T. J. Freeman, resigned.

KALSO & SLOCAN.—The Canadian Pacific has bought for \$25,000 from the Kalso Syndicate, the Kalso & Slocan Railroad, which the Great Northern sold to the syndicate last year. The Kalso & Slocan serves a number of mines in the mining districts of Kalso and of Slocan, and connects with the Canadian Pacific.

KANSAS CITY, MEXICO & ORIENT.—The protective committee for the International and Union Construction Company's stocks has extended the time for deposit until and including June 4.

KANSAS CITY SOUTHERN.—B. S. Guinness, of Ladenburg, Thalmann & Company, New York, has been elected a director, succeeding William F. Harrity, deceased.

MAINE CENTRAL.—Stockholders will vote on May 24 on the question of increasing the authorized capital stock from \$10,000,000 to \$15,000,000, and of authorizing the directors to determine the manner of issuing and disposing of the same. The Boston & Maine will have to subscribe to slightly over half of the new offering to maintain its control of this company.

MISSOURI & NORTH ARKANSAS.—Francis Bro. & Company and the Mercantile Trust Company, both of St. Louis, Mo., were awarded the \$1,250,000 3-year 5 per cent. receivers' certificates, subject to confirmation by the court.

NEW YORK & HARLEM.—At the annual meeting, minority stockholders asked for certain information, as to the value of their stock, which they claimed they ought to have to intelligently decide whether or not the offer of \$175 per \$50 share, made by the New York Central & Hudson River for the New York & Harlem stock, was fair. The company claimed that a good part of this information was not available, but the stockholders' meeting voted to request such information from the secretary.

NEW YORK, PHILADELPHIA & NORFOLK.—The Maryland Public Service Commission has received a letter from its counsel, according to a Baltimore press dispatch, saying that he did not believe the proposed stock dividend of \$1,250,000 was legal. The company in its application states that \$1,250,000 had been spent for capital betterments out of net earnings, and asks that the commission allow stockholders to be reimbursed for these expenditures by the issue of stock dividends.

NEW YORK STATE RAILWAYS.—This subsidiary of the New York Central & Hudson River has applied to the New York Public Service Commission, Second District, for authority to make a new first consolidated and refunding mortgage for \$50,000,000 to secure an issue of 50-year 4½ per cent. bonds and to issue \$6,357,038 bonds secured by that mortgage.

PERE MARQUETTE.—Receivers Walters and Blair on May 20 made application in the Federal Court at Detroit, Michigan, for permission to issue \$2,000,000 receivers' certificates to build new stations, round houses, coal plants and extensions of the yards at Toledo and Port Huron.

ST. LOUIS SOUTHWESTERN.—The new \$7,500,000 first terminal and unifying mortgage 5 per cent. bonds, dated January 1, 1912, and due 1952, recently sold to a syndicate of New York bankers, are being offered for sale at 90½, to yield about 5.60 per cent. on the investment.

SOUTHAMPTON RAILWAY.—The New Brunswick government has guaranteed the bonds of this company, which is operated by the Canadian Pacific to the extent of \$10,000 a mile. The road runs from Millville on the Canadian Pacific to Southampton.

TIDE WATER SOUTHERN.—See item under Railway Construction News.

VALDOSTA, FORT GAINES & MONTGOMERY.—This is the new name of the Valdosta, Moultrie & Western, operating a line from Milton, La., to Sterling, 45 miles. The company has, it is said, sold \$4,600,000 bonds in Paris to pay for the 230-mile line from Valdosta to Montgomery, Ga., as it is constructed. The Georgia railway commission, on March 14, 1912, approved an issue of \$2,300,000 of stock and \$4,600,000 bonds to be issued only on the construction of five-mile sections at the rate of \$30,000 per mile, of which \$20,000 was to be in bonds and \$10,000 in stock. On May 10 the commission granted a petition to deliver the entire issue and secure the cash on condition that the same be held by the Standard Trust Company, New York, in place of the bonds, to be paid out only under the same terms as those under which the bonds were to be issued.

WINNIPEG, SALINA & GULF.—This company has sold its entire issue of \$29,997,000 bonds in Paris. It is said that \$5,000,000 is already on deposit to the credit of the company, and that additional deposits of the same amount will be made from time to time as construction work progresses.